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Table of Contents

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ORIGINAL ARTICLES— Page.
Vertigo, by A. S. WALKER 929
Vertigo as a Symptom of Aural Disease, by E. P. BLASHKI 937
Anæsthetics in Australia in the Early Days, by W. L. POTTER, M.D. 940

REPORTS OF CASES—
Asthma Complicated by Spontaneous Pneumothorax, by COTTER HARVEY, M.B., Ch.M., T.D.D. 950
A Case of Acute Mastoiditis with Empyema of an Apical Petrosal Cell Drained by a Subtemporal Operation, by A. E. COATES and ERIC GUTTERIDGE 951

REVIEWS—
Practical Neurological Anatomy 952

NOTES ON BOOKS, CURRENT JOURNALS AND NEW APPLIANCES—
A Handbook for the Ship's Surgeon 952

LEADING ARTICLES—
Public Esteem of the Medical Profession 953

CURRENT COMMENT—
Intracranial Hæmorrhage in the New-Born 954
Acute Ulcerative Stomatitis 955

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—
Morbid Anatomy 956
Morphology 957

BRITISH MEDICAL ASSOCIATION NEWS— Page.
Scientific 958
Meeting of the Contract Practitioners' Group of the Victorian Branch 961
Nominations and Elections 961

PROCEEDINGS OF THE ROYAL COMMISSION APPOINTED TO INQUIRE INTO MATTERS PERTAINING TO NATIONAL HEALTH INSURANCE 962

CORRESPONDENCE—
The Present Position of Surgery of the Thyreoid 972
Diphtheria Immunization as a Partial Preventive of Poliomyelitis 973
Private Hospital Fees 973

POST-GRADUATE WORK—
New South Wales Post-Graduate Committee in Medicine 973

OBITUARY—
Eustace Russell 973

CORRIGENDUM 974

BOOKS RECEIVED 974

DIARY FOR THE MONTH 974

MEDICAL APPOINTMENTS VACANT, ETC. 974

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 974

EDITORIAL NOTICES 974

VERTIGO.[1]

By A. S. WALKER,
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VERTIGO is probably one of the least harmful of all alarming sensations, but in its severer manifestations it may be not merely alarming, but positively terrifying. Like pain or pleasure, it has no objective existence, and therefore is not capable of exact measurement. It is possible to measure the non-existent in some instances; for example, in the science of optics the virtual image of a lens has no existence in fact, but nevertheless is capable of measurement. But in medicine, when we try to assess the kind and degree of perception by its reflection in the nervous system, we cannot be so exact. Only by the patient's description and by the appearance of related objective phenomena can we form any idea of a sensory stimulus. Attempts have been made to allot varying shades of meaning to different words, such as giddiness, dizziness or vertigo. This always seems to me to be the essence of futility; for it is not what the doctor means by a word which counts in a history, but what the patient means. In this respect patients often resemble Humpty Dumpty, in "Alice in Wonderland", who boasted that he used words to mean just what he chose, the difference being that this legendary egotist paid them wages for this service each Saturday night.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on September 29, 1938.

Description of Vertigo.

It is not easy to define vertigo. Even Gordon Holme's definition of "a sense of unstable equilibrium" and Russell Brain's "a sense of disordered orientation of the body in space" are inadequate; for it is difficult to dissociate the sensations which arise alone from powerful stimulation of the end-organ of equilibrium and its own appropriate neural connexions from those which arise from the overflow into neighbouring visceral channels.

Subjective Sensations.

Let us first consider the story of the patient. It is likely to be more graphic if he is seen during the declining stages of an attack; in the acuter stages he may be pardoned for not being conversational. Usually, however, he is seen in the interval period, and here the history is all-important. We have to decide first if he really had an attack of vertigo, and next what was its degree of severity, for this fact alone is often of great diagnostic importance. Slight attacks of giddiness may be due to many causes; severe and dramatic seizures are due to a few causes only, and in most cases to one alone. The patient will usually manage to express the indefinable loss of balance and orientation, with loss of stability. I use the word "indefinable" purposely, for it is curious and often highly characteristic that he is frequently unable to describe his exact feelings. This difficulty, which is common where the fundamental functions of life are touched, may be simply illustrated in a minor way by recollecting how hard it is to put into words that vague compound of faintness and dizziness felt after a powerful expiratory effort against resistance, as in blowing up a spirometer or even a child's balloon.

The essential part of the sensation of vertigo is an apparent disturbance of the mutual relationship of the patient's body in space with external objects. In the classic form this disturbance is described in terms either of vision or of muscle sense. Thus the victim has the illusion of seeing everything whirl round and round, buildings may sway over to him, or the ground may rise up to meet him. Or he may have an overpowering sense of falling and, of course, may actually fall. But it is interesting that it is not necessary for him to see in order to have a sense of rotation, for he may be acutely aware of a feeling of violent movement even in the dark.

A doctor patient recently described vividly how an attack came on during the night with an onset which banished sleep with a suddenness and shock almost like a blow on the head, and even in the complete darkness a terrible sensation was experienced as if the whole body was being whirled round most alarmingly.

In this case there is a violent disharmony between two varieties of proprioceptive sensory impulse, one from the limbs, body and head, the other from the semicircular canals. I point out here that although the classic sensation of rotation of external objects may be and often is absent, it is not essential as part of the picture; but it is seldom indeed that some sense of intrinsic movement is not described by an intelligent patient.

Diplopia may be complained of also, but this is not common. It is often noticed that the giddiness is definitely related to some position of the head and eyes, and the posture of maximum comfort is automatically selected; these phenomena are easy to understand in view of the mechanism of the righting reflexes. These points are of some importance, for they are a reliable indication of labyrinthine disturbance. During the recovery period the patient often notices that an unguarded movement of the head or eyes, such as turning suddenly or craning up to look at a tall building, will bring on a return of giddiness. Faintness or loss of consciousness is sometimes described, but an outright syncope or actual coma is very rare. This is a much debated question, which has been confused by a lack of clarity in defining what is meant by loss of consciousness. Crowe,[1] in his recent review of the results of the surgical treatment of the Ménière syndrome, says that 15 out of 117 patients suffered loss of consciousness. But this statement is based on the histories alone; for while the patients were in hospital no loss of consciousness was observed, nor did any convulsive attacks occur. As a matter of fact, while complete loss of consciousness, that is, coma, is rare, the lesser cerebral disturbances are not infrequent. It would be strange indeed if such a violent disturbance of the primitive sensation of balance did not derange the higher fields of consciousness. The neopallium is, as it were, forced to subordinate itself to the lower cerebral levels, which are not concerned with "highbrow" considerations, but the mere low act of living. Transient syncope is comprehensible as due to a carotid sinus disturbance with vagal overflow. This may account for some of the curious and unusual cases of laryngeal vertigo in which consciousness is certainly completely lost. This is, as Adams[2] points out, not a very clearly defined state, since recorded cases probably include such diverse states as transient fainting after a cough with laryngeal irritation, coma after extremely severe coughing, and even epileptic seizures with a laryngeal aura. It is, however, very important to try to ascertain just to what degree higher consciousness has been disturbed; for this is a very valuable index of the severity of an attack. One would not expect a person seized by an acute vertigo to think connectedly of anything else.

Last of the subjective sensations, and one of the most important for diagnosis, is tinnitus. As Dr. Blashki has shown, it is a most significant symptom, because the large majority of cases of vertigo are of aural origin. In most cases there is some history of tinnitus, preceding and accompanying the giddiness; but this is not invariable. It is rather curious that it is a symptom the occurrence of which frequently has to be ascertained by direct questioning. The layman sees no connexion between a noise in the ears and loss of balance, and in any case the

vertigo may bulk so largely in his mind that he may fail to mention the tinnitus that gives so valuable a clue to his condition. Headache is a common complaint in many cases, but this is so general a type of symptom and due to so many different causes that it is not of help in diagnosis.

Nausea must be mentioned; it is also very common, and in association with epigastric uneasiness leads us on to the purely objective signs, for it is not infrequently accompanied by vomiting.

Lastly, one of the most highly distinctive of all points in the history of attacks of vertigo is the quality of intermittency. This is so characteristic a feature of the commoner varieties of giddiness that details should always be sought.

Objective Signs.

Of the objective signs, the most important are pallor, salivation, sweating, vomiting, evacuation of the bowels, loss of muscular tone, with perhaps tilting of the back of the head towards one shoulder, nystagmus and falling. The pallor, sweating and nausea are, of course, due to the same cause as those of severe travel sickness. It is often said that diarrhœa occurs with severe labyrinthine disturbances. This is incorrect; it is rather a rapid and often fluid evacuation, as irresistible as the act of vomiting. It is easy to see why these symptoms should occur, and they are best illustrated by consideration of the cross-section of the brain stem at the point where it may be affected by thrombosis of the posterior inferior cerebellar artery or a relevant tributary of the vertebral artery. The parallel is not exact, for this particular lesion is not a pure end-organ affection; but it serves to remind us how close to the descending root of the eighth cranial nerve are certain other nuclear and radicular connexions, particularly those of the vagus. Dramatic vagal disturbance is thus to be expected, though, considered from the teleological point of view, it is curious that powerful stimulation of the vestibular nerve should be able to produce such a devastating effect on other important bodily functions, unless indeed it is an efficient brake imposed by Nature on the activities of a person who has temporarily lost so fundamental a sensation as that of balance. Nystagmus is so striking a sign and is so easily looked for that the eyes should always be examined if the patient is seen during or soon after an attack, when it is easily elicited, and even spontaneous nystagmus is occasionally seen. Falling may occur as a result of a sudden disturbance of somatic muscular tone, and even lateral propulsion may be observed. The latter is due to the violent muscular contractions induced by unbalanced vestibular impulses, and when the patient's muscles, acting under this abnormal stimulus, fling his disoriented body roughly aside, the event is indeed a dramatic one. Tumarkin[3] believes that certain of the rare cases of instant brief physical collapse, due to a gross disturbance of tone of labyrinthine origin, are accounted for by an otolith catastrophe, and points out that these attacks are unique and do not recur, and that they are not ingravescent like aural vertigo, but instantaneous, and are unassociated with vagal symptoms. Seizures such as these must be rare. Before leaving the consideration of the symptom of giddiness and its side-effects, we must not omit to mention the desirability of inquiring if the patient is unduly addicted to tobacco or has been taking drugs like barbiturates. I have seen several cases in which the patient's primary complaint of a moderate degree of vertigo and incoordination was due to barbiturates, either through overdosage or idiosyncrasy. The not infrequent occurrence of headache and giddiness after the taking of sulphanilamide is also worth mentioning here, and also the association of the same symptoms with alkalosis. Now we come to the examination of the patient at the time when he is most frequently seen, that is, during the interval period.

Investigation.

It is not difficult to assess the severity of an attack of vertigo if the patient is seen at the time, for instance, when in the throes of an acute vestibulitis. He carries to the *n*th degree the immobility of the seasick passenger: he fears to move and lies curled up, atonic, though perhaps clutching the bed convulsively, and even unwilling to open his eyes for fear of accentuating the devastating sense of insecurity that threatens all that is stable in his physical world.

The objective signs described above may be seen during any severe attack; but it usually happens that we have no opportunity for examining the patient while he is actually giddy. We must therefore consider what useful information may be obtained by investigating a patient who is at the moment almost or entirely symptomless.

The usual routine physical examination is carried out, and in particular we have to try to assess the diagnostic value of the findings in the cardiovascular system and the nervous system, with special reference to the second and eighth nerves and their end-organs. Actual cardiac lesions and blood dyscrasias should, of course, be detected; but these are not of much importance *per se* in severe vertigo. They may be contributory factors, but are seldom the root cause. It is worth noting that extrasystoles often occur in middle-aged subjects of vertigo. General vasomotor instability is no doubt also a contributory factor, but here too it is probably more often significant in the less severe attacks that may be of multiple ætiology.

Hypertension may be of importance, since vascular spasm is so often a feature of the hypertensive state, and it has been suggested that such spasms may affect the internal auditory artery, the cerebellar, pontine or cerebral arteries in cases of vertigo. Such conditions are probably not of much importance in the causation of severe vertigo. It may be laid down as a general principle that the most spectacular disturbances of equilibrium arise from changes in or near the end-organ, whether

the mechanism at work is vascular or not. This holds good for other forms of sensation also; for the farther away from an end-organ a stimulus is applied in the nervous system, the more diffuse and less focally intense will be the result. Speaking generally, "negative" symptoms may arise from a point in the central nervous system remote from an end-organ by simple loss of function, and release phenomena also, through faulty adjustment. But where "positive" symptoms occur, the more striking and intense they are, the nearer will their origin be to the end-organ. For example, a sudden blazing light, a loud or disturbing noise, or an acute feeling of loss of equilibrium that have no origin in the outside world, are much more likely to arise from the eye, the cochlea or the vestibule than from the sensorium. Therefore, in seeking the cause of intense vertigo we should look first to the labyrinth rather than to its central neural connexions. Accordingly, in cases of hypertension, though slight to moderate giddiness is common owing to the vascular instability, when severer degrees of vertigo occur it is not necessary to postulate circulatory changes in this or that cerebral or cerebellar nucleus; the cause is much more likely to be in the labyrinth. Actually a normal or low blood pressure is a commoner finding in cases of aural vertigo, and Davis[4] and others have reported series in which hypotension was quite a frequent finding.

I have analysed 40 cases of aural vertigo seen by me during recent years; most of the patients were referred to me to exclude a central nervous lesion or a serious vascular one, or merely to clear up an attack of supposedly obscure type, and in all cases one or more severe attacks of giddiness had occurred. Of these, 19 were men and 21 women, and their age-groups were as follows:

Age.	Number.
Under 30 years	8
30-40 years	2
41-50 years	9
51-60 years	10
Over 60 years	11
	40

In this series the diastolic blood pressure was 100 or over in the case of six patients only, and all but one of these were about fifty years of age. In only one case was the blood pressure really low, that is, a systolic pressure of about 100 and a diastolic pressure of about 60 millimetres of mercury; in all others it was within normal bounds.

Diagnosis of anatomical vascular lesions like intracranial hæmorrhage or thrombosis is usually plain sailing, and there is only one of real interest and importance here. This has already been referred to, namely, thrombosis of the posterior inferior cerebellar artery. In this there is a distinctive picture which in its classic form includes vertigo, vomiting, difficulty in swallowing, sympathetic phenomena in the eye, and loss of sensation for heat and cold on the opposite side of the body and on the face on the same side. The vertigo may be sudden in origin in these accidents; but more often it is of the ingravescent type. Though the clinical picture varies, owing to variations in the actual vessel affected and the degree of anoxæmia of the part of the brain stem concerned, it is quite distinctive. It should not be mistaken for a simple labyrinthine vertigo, since objective neurological signs are invariably present.

CASE I.—A man, aged forty-six years, became giddy while walking and found he was unable to walk straight. He sat down and then tried to walk again; things spun round before his eyes and he felt nauseated. He managed to stagger to an office where he could rest, and then felt able to be driven home, though he constantly staggered. He went to bed and next day was unrelieved; in fact he was rather worse. Headache was severe and the giddiness was intense. He felt forced to shut his eyes, as objects tended to rotate. He could not control the movements either of eyes or hands, though his writing was actually better with his eyes shut than with them open. He had a small pupil on one side, and there were some disturbance of sensation of the same side of the face and slight loss of thermal sense on the opposite side of the body. He eventually made a good recovery.

Such cases show how very important it is to examine the nervous system carefully in order to detect any serious nervous lesion; fortunately this is usually easy. If a patient presents himself complaining of severe vertigo, if this is due to an important intracranial lesion there will usually be unequivocal signs to be found. It is the rule to find no abnormality in the patient of the labyrinthine type unless he is seen during or soon after the attack, and then nystagmus will be the most striking sign. Dr. Blashki has described this and outlined its nature and mechanism.

Let us now ask what intracranial lesions may produce moderate or severe vertigo. Moderate degrees of giddiness may occur in forebrain lesions, but only with a fairly diffuse affection of the cortex or the subjacent white matter. Cerebellar lesions are curiously undependable in this regard; for vertigo is a most inconstant symptom: it usually occurs in acute lesions only and in others may be entirely absent. Where the vestibular nerve is affected by a tumour, such as an acoustic neuroma, dizziness may be intense but may disappear as the tumour grows; for then irritation of the nerve is succeeded by loss of function. Neurological surgeons and others may also think of the rare third ventricle tumours, with their recurring headache and giddiness, such as those reported recently by Lindon.[5] In addition to these, syphilis may need to be considered either as a general meningo-vascular lesion or in the form of *tabes dorsalis*.

Encephalitis of the epidemic type appears to be responsible for vertigo in some cases; but in this case, as also in disseminated sclerosis, there are other definite neurological signs. In disseminated sclerosis involvement of the eighth cranial nerve may cause vertigo, with tinnitus and affection of hearing; but the diffuse nervous phenomena should be characteristic; in any case, it is not at all common in this part of the world. *Herpes zoster* is worth passing mention; its typical signature

present on the skin clearly declares its identity. To complete the list, epilepsy may sometimes have a vertiginous aura, and giddiness is a very common sequel of head injuries.

The position as regards the relation of organic intracranial lesions to vertigo has been well summarized by Dandy,[6] whose remarkable record of 170 operations in cases of Ménière's syndrome without a death entitles him to respect. The most important organic causes he lists are acoustic neuroma, angioma and vascular anomalies, such as aneurysms of the vertebral artery and arterial loops, causing either pressure or strangulation of the eighth nerve. These vascular abnormalities were found in cases that might otherwise have been classed as unrelated to gross organic changes; but apart from this uncommon group, the most important of the intracranial lesions is the acoustic neuroma, the tumour of the lateral recess. Can this tumour cause severe recurring attacks of vertigo? There is no doubt that it can; but other signs are not lacking, such as those affecting the seventh and, less constantly, the fifth cranial nerves.

CASE II.—A woman, aged sixty-three years, complained of tinnitus in one ear, headache and unsteadiness, with recurring attacks of severe giddiness, nausea and vomiting. Examination showed loss of sensation over part of the field of one fifth nerve, with some facial weakness and loss of hearing on the same side. There was a definite grade of papilœdema. That this patient had an acoustic neuroma seems certain, though opportunity to prove it by operation was denied us, since she unfortunately suffered a coronary occlusion while under observation. Several of her attacks of vertigo were witnessed in hospital, and they were severe and prolonged over several hours, and quite indistinguishable from those of a purely aural vertigo.

Next the ocular apparatus may need investigation. Imbalance of the ocular muscles is a frequent source of minor degrees of giddiness. Looking down while walking on a tessellated pavement of sinuous design, watching the ground while coming in to land in an aeroplane, or following a procession with the eyes, especially from a high balcony, will all cause giddiness in susceptible people. Here the vestibular mechanism underlying nystagmus is, as it were, reversed. As regards examination of the cochlear and vestibular mechanism, this has already been described.

It is important to have some idea of the value of these special examinations. An accurate report on the auditory canal, eardrum, middle ear and Eustachian tube is essential. There is a class of case in which sclerotic middle-ear changes, perforation of the drum, labyrinthine disease and even cerumen in the canal may be an important factor. But labyrinthine tests are in a different category; for, though of importance and interest, they are of very little diagnostic value in the majority of cases, because the patients are usually examined in the interval periods, when little abnormality is found. Perhaps the only finding may be, say, some hypofunction of one or other semicircular canal, and it is not fair to look to the otologist to establish a diagnosis by these means alone.

We have now reached the stage when the patient has told his history, been cross-examined and been subjected to a full physical overhaul. We have placed him as a sufferer from a minor, moderate or incapacitating degree of vertigo, and thus narrowed the diagnosis. In severe cases the cause may be a single fulminating attack of labyrinthitis occurring as the result of an acute infection, such as influenza, mumps *et cetera*, or as extension from *otitis media*; this will be obvious. Otherwise it is certainly an instance of the common relapsing form of aural vertigo, provided we have excluded serious intracranial lesions, such as tumour or thrombosis. This question is immediately settled by the presence or absence of neurological signs. If the vertigo is slight or moderate in degree, the part played by anæmia, circulatory defects or disease, toxic causes and ocular imbalance must be considered. These contributory factors and the possible exciting local factors, such as a blocked Eustachian tube, must be fitted in. Even excessive fatigue may play its part, and migraine must not be forgotten; for in some people giddiness may be an accompaniment or a variant of headache. It is in these slighter grades of vertigo that we have to think of a number of general or local factors; but I reiterate that once we have eliminated the possibility of a serious intracranial lesion, a really crippling attack of vertigo, as estimated by the degree of incapacity it has caused, and in particular by the number and intensity of the dramatic overflow symptoms, is for all practical purposes certain to originate in the end-organ in the labyrinth. Of course, it will be realized that the sufferer from labyrinthine vertigo may have occasional slight and transitory attacks; but the inevitable occurrence of severer seizures makes the position clear.

Ætiology.

We now are in a position to theorize a little about the cause of vertigo in general.

We may class the causes roughly as extraaural and aural.

Extraaural Causes.

The serious intracranial lesions, such as the cerebral or cerebellar vascular accidents and the tumours, in particular the neuroma of the eighth nerve, have already been mentioned. I wish to elaborate a little more the transient vascular causes, in particular arterial spasm, and the vague and difficult cases of multiple ætiology.

The question of the actual and relative importance of definite hypertension or hypotension is of interest. Hypertensive patients are, of course, frequently subject to giddy attacks, due to sudden variations in cerebral circulation in whole or in part; but these are seldom of really severe degree. A good example is seen in Case III.

CASE III.—A woman, aged fifty-six years, was suffering from a long-standing hypertension of high grade, the systolic blood pressure being 260 and the diastolic pressure 160 millimetres of mercury. Her heart was failing, causing the common attacks of nocturnal dyspnœa with some

pulmonary œdema. She complained of severe attacks of giddiness, but, on being questioned as to their nature, she replied: "They suddenly come on me and I feel weak and giddy, though they don't last long; and if I close my eyes I seem to be floating away." The difference in this story from that of the patient with labyrinthine disease is evident.

Other patients, however, have severe attacks of giddiness undoubtedly of the aural type, and are found to have some aural lesion, such as sclerosis or Eustachian block, and in addition to have a benign type of hypertension. This class of patient is not a large one; but study of their attacks gives me the definite clinical impression that, taken with some aural disturbance, their vasomotor instability plays a part in predisposing to such attacks. This may or may not be so; but if the aural condition can be adjusted, satisfactory relief does seem to be attained, subject to the usual fallacies common to all cases of occasional vertigo.

CASE IV.—A woman, aged sixty-three years, was known to have a benign type of hypertension. She had experienced one severe attack of labyrinthine vertigo several years previously. On the present occasion she had another fairly severe attack, with apparent rotation of objects, nausea, vomiting and a feeling of faintness. This passed after some hours; but a degree of giddiness persisted until a tight plug of cerumen was removed from one ear. She has since been well.

Less satisfactory are the milder but often obstinate cases of vertigo which seem to depend on a variety of causes. Two illustrative cases follow.

CASE V.—A woman, aged thirty years, married, with no children, complained of attacks of giddiness lasting five minutes, when external objects appeared blurred and tended to go round. She also experienced sometimes a slighter grade of giddiness, which lasted for a longer time; during these attacks sounds appeared distant, she was nauseated, but never vomited; she had occasional tinnitus, which was only brief; she had never fallen, but tended to fall forward and to the right. There was a congenital cardiac lesion, thought to be due to a patent *foramen ovale*. There was a slight grade of secondary anæmia, and the nasal septum was deflected a little. The left eardrum was slightly dull, both Eustachian tubes were patent, the left labyrinth was hyposensitive. There was an error in refraction, corrected by glasses; but further examination by Dr. St. Vincent Welch revealed a latent muscular imbalance, with 10° to 12° of exophoria, for which a prism was prescribed. X ray examination revealed no lesion of the skull or sinuses, and there was no evidence of dental infection or impacted teeth. There appeared to be a very strong functional element in addition; but after a period of rest, with sedatives and adjustment of the refractive and muscular error of the eyes, she improved considerably.

CASE VI.—A youth, aged nineteen years, complained of giddiness and headache for six months. He sometimes felt inclined to fall forward in the attacks, which lasted a few minutes only. He had never actually fallen, nor had he observed rotation of external objects, though he sometimes felt as if his body were turning round. He felt giddy and often faint if he turned a corner quickly in a car, even at night. He had no tinnitus. He was slow and lethargic, of poor physique. There was a slight internal strabismus in the right eye, which had been surgically corrected, with a good, though not perfect, result. The systolic blood pressure was 110 and the diastolic pressure 65 millimetres of mercury. No abnormality was detected in the examination of the lungs and heart. The gait was uncertain when the eyes were shut. No abnormality was found in the nervous system. Dr. Davy found that the nasal septum was greatly deflected, and reported a slight nerve deafness in the left ear and hyperirritability of the labyrinths of both sides. The septum was resected, and while the patient was in hospital the vestibular tests were repeated and then showed no deviation from the normal. He was considerably better a month later, but not entirely relieved.

It is cases of this kind which are extremely difficult to assess, and it is perhaps worth noting that both these patients were of the nervous and anxious type. Treatment is accordingly difficult, and the results are not always as perfect as might be desired.

Aural Causes.

We now turn to the purely aural cases, which are of interest not only to the otologist, but also to the physician and the general practitioner.

I think it was Gowers who said that 90% of all cases of vertigo were referable to the ears. There is such a large proportion in any case that I wish to refer a little in detail to aural vertigo, apart from that type due to an actual labyrinthitis. I do not refer to cases due to extension of disease from the mastoid, as these are the province of the otologist. Most of these patients show some aural affection, such as deafness and tinnitus. Eustachian block is not uncommon, and not infrequently some sclerosis of the drum or ossicles; but these features alone do not explain the attacks, which occur even in the absence of any apparent organic ear disease. The most striking features of severe aural vertigo are its relative suddenness and its periodicity. This holds good whether there is any gross aural affection or not. Ménière did useful work in drawing attention to these attacks, but described a false pathology, since it is certain that labyrinthine hæmorrhage is seldom the cause even of single attacks, and never the cause of relapsing vertigo. Discounting this inaccurate explanation, the Ménière syndrome is usually taken to be the condition in which recurring severe attacks of vertigo occur either with or without an organic aural lesion, which in any case is insufficient to account for them. It matters little whether we speak of Ménière's disease or aural vertigo, for we must try to discover what are the causes of these extraordinary vestibular convulsions.

There is no doubt that the prime cause of the disorder is in the labyrinth; but the influences responsible are not so easy to determine. It seems that reflex disturbances may occasionally arise, as from the irritation of impacted teeth. More definite are the toxic causes. We know that certain chemical substances may produce intense giddiness: nicotine, for example. We know also that an actual inflammation of the end-organ produces extreme disarrangement of its function. Why, then, should not toxins from some more or less distant source in the body, a septic focus to wit, cause vertigo? A. J. Wright[7] is the high priest of this belief, and he cites the tonsils, teeth, antra, gall-bladder and intestine as potentially or actually guilty in this regard. He regards the disorder as a focal labyrinthitis, and though he admits he is dealing with a disease of periodic type, he is enthusiastic about the results of eradication of septic foci. I admit

that while I do not deny this possibility and believe in occasional cases it is a rational line of treatment, I am sceptical of its wide application. Even Wright admits that he cannot cure all patients by removal of septic foci; but he regards these as instances of damage which is beyond recall. But septic foci are so common; why is focal labyrinthine disease not more common? Further, the remissions in aural vertigo are so remarkable and so unpredictable that we must be cautious in accepting a cure too readily. It must be admitted also that exponents of other hypotheses are equally enthusiastic.

Other possible contributory factors, for instance in the vascular system, have been mentioned. What other mechanism may we invoke? Numbers of authors have suggested that just as papillœdema and retinal thromboses and hæmorrhages occur in vascular disease, so similar changes may occur in the labyrinth. This hypothesis is obviously limited in its application; for it is possible for repeated attacks to occur, leaving the labyrinth apparently little changed over a considerable period. The parallel of glaucoma has also been drawn. This is a much more plausible suggestion; but what is its mechanism? And can it occur with an intact vascular system? One of the most popular of recent hypotheses is that there is a coincident general metabolic disturbance in the salt and water regulation, which, taken with some local sensitizing or determining factor, causes a sudden imbibition of fluid by the labyrinthine structures. Mygind and Dederding[8] have made many observations supporting their belief that a sort of waterlogging occurs. The changes found are said to be loss of low-note perception, lessening of bone conduction, increase in body weight and thickening of the subcutaneous tissues, particularly of the legs and face, and a sluggishness in dealing with measured quantities of ingested water. These Danish workers and others have carried out investigations which seem to support their contentions in certain cases, and Furstenberg in particular has supplemented their theory by suggesting that sodium retention is responsible for the anomaly in water metabolism. Furstenberg[9] is specially enthusiastic over the results of the use of his special diet, which is very low in sodium and is salt-free. No drugs containing sodium are given, and ammonium chloride is administered in order to prevent sodium storage. A point of some practical importance here is made by Brown, who reminds us that patients who suffer from nausea often take large doses of bicarbonate of soda, thus perhaps helping to perpetuate their sodium imbalance. It is difficult to accept this concept of hydration of the labyrinth as the only cause; for in clinical medicine patients with sodium retention or dropsy are not specially liable to vertigo, and it seems hard to explain why so widespread a metabolic anomaly would affect one minute structure like one labyrinth.

Of course, we do not know all about water metabolism yet, but there are some interesting facts that may be recalled. Rapid changes in water retention, as by sudden alterations in intestinal movement and absorption, can affect isotonicity of the blood and thus the intracranial and cerebrospinal pressures. Also migraine, which is thought by some to be related to water retention, may be sometimes relieved by a draught of water early in the morning, a phenomenon thought to be related to the copious diuresis thus started. Wenckebach[10] has pointed out that swelling of the cardiac muscle fibres with water occurs with deficiency of vitamin *B*, the administration of which readily restores the normal state of affairs; he quotes the parallel in cases of myxœdema. At the same time he says that it is hard to imagine a gross disturbance in water metabolism without changes in function of the kidney, brain and heart. Mygind and Dederding suggested that the œdema in the labyrinth might be either extracellular or intracellular, the latter in the more severe cases; but this is only surmise. Some observers claim that on examining patients with vertigo they can pick those with an error in water metabolism by their thickened tissues; I have not been so skilful or fortunate. But even if this hypothesis of electrolyte disturbance is not fully sustained, there may possibly be something in it from the practical standpoint of treatment. It might be an advantage to lower the capacity of the patient to hoard sodium ions, and therefore water, in certain sensitive tissues, even though no gross disturbance of this kind had demonstrably existed beforehand; it is also a simple matter to restrict his fluid intake.

Crowe points out in his review of the subject that chemical, circulatory or pressure changes in the endolymph could cause both the auditory and vestibular symptoms. Nuclear lesions are not likely to be the cause, which certainly lies in the nerve or end-organ.

A toxic neuritis has been blamed by some writers; but, as Crowe remarks, no histological changes have been demonstrated in the nerve, and this cause would make the remarkable variation of the symptoms very difficult to understand, though the parallel of trigeminal neuralgia has been quoted by the exponents of the neuritis theory. However, this is certain: section of the vestibular nerve completely relieves the symptoms, as neurological surgeons have shown.

Cairns and Hallpike[11] have recently presented some important observations based on actual histological study of material obtained from two patients who died from complications attendant upon section of the eighth cranial nerve. The tissue changes were such as have been described as a serous labyrinthitis; but gross dilatation of the endolymph system and elevation of the otolith membrane of the utricle were also observed. In one case chronic middle-ear inflammation was present; in the other no such change was seen. Hallpike suggested that these cases might belong to a class, noted on the examination of a series of apparently normal internal ears, in which the connective tissue round the *saccus endolymphaticus* was poorly developed.

This might easily be of importance, since the normal degree of absorption into the perisaccular connective tissue might be interfered with, the *sacous endolymphatious* thus being hindered in what seems to be its function of adjusting the pressure of the endolymph system. Hallpike's hypothesis is that there had been some disorder in the mechanism of fluid absorption of the endolymph, the possible factors being an anatomical predisposition and a hypersecretion of endolymph due to some obscure cause. Hallpike further suggests that when the whole endolymph system dilates to the point where no further adjustment is possible, any further increase in pressure cannot be compensated for, and sudden asphyxia of the vestibular end-organ may thus occur, with dramatic results.

This work is invaluable and, taken in conjunction with other observations, seems to lead us nearer to reasonable understanding. It seems likely that in a number of cases there are multiple factors at work. It is conceivable that an anatomical variant in structure, with consequent alteration of function, when combined in varying degree with local changes in the ear, causing pressure variations, with circulatory changes, and perhaps some toxic or metabolic factor, could set the mechanism in train which brings about a result often so startling to the patient and his medical attendant.

Certainly in many of the minor cases of vertigo there are many factors, and possibly it would be wise if we kept our minds open to the idea that more than one cause may sometimes be at work.

Treatment.

It is perhaps not superfluous to say that first a diagnosis must be made. It is a tragedy to label as cardiac a disorder which has nothing to do with the heart, nor does it benefit a patient with vertigo to poison him with digitalis. It is equally unfortunate for a patient to live under suspicion of brain tumour when he has absolutely no signs of a nervous lesion.

In the simpler cases attention to any muscle imbalance in the eyes, anæmia, or other circulatory factors may help. Wax should be removed from the ears, and the Eustachian tubes rendered patent. These simple measures seem to relieve some people greatly. Eustachian block in particular is important. I do not say for a moment that patients with severe labyrinthine attacks are cured by this means; but it surely must be an advantage to remove one source of pressure or irritation such as might make an unstable labyrinth more sensitive. It is reasonable and probably advantageous to remove or deal with obvious septic foci. Speaking personally, I am not sufficiently enthusiastic to pursue streptococci *et cetera* to the bowel or other remote fastnesses of the body; but I should at least advise removal of obviously infected teeth or tonsils, or drainage of infected antra. Unerupted impacted teeth should be thought of also, as the reflex disturbance may sometimes be considerable. Among sedatives, phenobarbital is preeminent, and at least allays the apprehension of the patient and lessens the general reactivity of his nervous system. It is my definite clinical impression that prolonged administration of mild doses of such sedatives lessens the liability to attacks.

It is well to caution the patient against sudden or violent movement of the head and eyes, since these may transform a latent to an actual vertigo.

The plan based upon the water metabolism studies is worth a trial, even if we all do not agree with the arguments on which it is based. Ammonium chloride is given in a dose of up to 2·7 grammes (45 grains) three times a day; it is administered in capsules for three days and then omitted for two days, over an initial period of two weeks, and if the patient is having severe and frequent attacks some idea may be gained of whether he is improving. The drug can be continued for a long time without harm, though it is apt to cause nausea. To fulfil the theoretical conditions fully, the water intake must be restricted and some type of low-salt diet, such as Furstenberg's, given. Eggs, fowl, fish and meat are given as desired, with bread, cereal, potatoes, milk, vegetables and fruit, butter, cream, sugar, jam and tea or coffee. But the salt content must be kept low under Furstenberg's régime, so salt meat is not allowed, nor salt butter; raisins, spinach, olives and oysters are also prohibited. Other vegetables and fruit, such as lima beans, beet, melons, cauliflower, celery, currants, dates, figs, radish, strawberries, turnips and cress, are allowed only twice a week. It will be seen that the practical difficulties, except in a hospital with an elaborate diet kitchen, are considerable; for all foods must be prepared without salt. It is also important that no drugs containing sodium should be administered. I have not had the facilities for trying out this régime in its strictest form, but have used ammonium chloride with a diet restricted in salt as far as possible, and have also prescribed no drugs containing sodium and have limited the intake of water by the patient. I have seen several patients improve while under this régime; but I admit I have not tried to produce recurrences of symptoms by giving sodium. As Mygind and Dederding point out, it is difficult and not inexpensive to keep a patient on a salt-free diet, but it is easier and possibly more important to see that the total fluid ingested is reduced to a low level. A quantity not exceeding 20 to 30 ounces a day is suggested for trial.

I feel that in dealing with a condition subject to such extraordinary remissions it is very difficult to assess the value of treatment, and though some of the reports in the literature are highly suggestive, the underlying fallacy in these cases is great. The cautious physician at present can do no more than remove all factors that may cause irritation and use such adjuvants as these and keep an open mind as to the value of the measures he employs. I have noticed that there seems a tendency for attacks of vertigo to occur in bouts, with corresponding periods of freedom. Thus when an attack of some severity

occurs others may follow; but when these disappear the patient may remain well for a considerable or even a long time. Probably the labyrinthine trigger is very lightly set for a time, and it may be pointed out that the same phenomenon occurs in asthma, though I hasten to clear myself of any suggestion that all aural vertigo should be placed on the daily growing list of maladies said to be due to allergy.

The following report illustrates how a long period of calm may occur even with a seriously damaged labyrinth.

CASE VII.—A woman, aged forty years, complained of some slight abdominal pain. This was thought by her surgical adviser to be possibly of pelvic origin; but it would not have given rise to any anxiety had she not also complained of nausea and vomiting. Six years ago one breast had been removed for a proved carcinoma, and the possibility of metastases had to be considered. The pain soon disappeared, and no abnormality was found at the operation site, nor was any lesion disclosed in skiagrams of the head, chest or spine. Further inquiry revealed that the vomiting was accompanied by giddiness and was definitely accentuated by getting up quickly or by moving the head about. She was somewhat unsteady of gait and held her head tilted to one side. The real cause in this case goes back nine years to an attack of mumps of extraordinary severity, with many complications, including vestibulitis and meningoencephalitis. Ever since this illness she has been quite deaf in the left ear, and now has complete nerve deafness on that side. She had suffered from giddiness for about three months after the mumps, but this disappeared and had only recently returned. On questioning she admitted that she often noticed in the deaf ear a roaring noise, which was much worse before the attacks of giddiness and vomiting. In spite of complete deafness it was evident that the left cochlea and auditory nerve were still able to initiate the symptom of tinnitus. The left labyrinth was also found to be alive; for syringing the left external meatus with cold water produced nystagmus with intense vertigo and nausea. The long latent period in this history is of great interest. A septic tooth has been removed, and treatment is now being pursued with ammonium chloride, a low-salt diet and fluid restriction, with some improvement to date.

The surgical treatment of severe vertigo is outside my scope; but I may mention specially the method of destruction of the labyrinth by alcohol injection and the section of the nerve by open craniotomy. Such methods are amply justified by the frequent occurrence of severe and crippling attacks of vertigo; but they must be employed only by the recognized technical expert. The risk of open craniotomy cannot be ignored, in spite of the excellent records of Dandy and others; but these workers have demonstrated that destruction of the vestibular end-organ or division of the nerve is an absolute cure for severe recurring vertigo.

Great interest has been taken in the subject of the Ménière syndrome in the last few years, and much of this revival of interest is due to the activity of neurological surgeons. It must be emphasized, however, that the recognition of this condition does not need a specialist. Though the complete explanation of vertigo may be difficult, the clinical interpretation of the symptom is within the reach of any physician interested in the subject. The patient complaining of giddiness should be placed in his correct category without much trouble if a careful history is taken and adequate examination made. Cairns and others have pointed out that an accurate clinical study of the symptoms, as regards type, frequency and periodicity, in cases of labyrinthine vertigo, is greatly needed, and all of us will improve our clinical acumen by a careful survey of our patients.

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VERTIGO AS A SYMPTOM OF AURAL DISEASE.

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Introduction.

IT is my share of this evening's discussion to deal with vertigo as an aural symptom. That is to say, such forms of vertigo as are caused by definite aural disease or by indefinite aural changes, so that accompanying the symptom there is some lasting or temporary affection of the end-organ of the eighth cranial nerve. Vertigo of this nature is incomplete without a sense of rotation, nystagmus, or past-pointing phenomena during the attack. It is frequently accompanied by tinnitus and some degree of deafness.

Brand in a recent article has very neatly summarized the anatomical paths of the vestibular nerve, as follows:

Labyrinth—Deiters' Nucleus—and some fibres to the cerebellar cortex. From the vestibular nuclei fibres enter through:

(*A*) Post-longitudinal bundle and end in certain cerebral nuclei:
- (*a*) the vagus, which accounts for visceral symptoms (vomiting, etc.);
- (*b*) the eye centre, which accounts for the nystagmus;
- (*c*) the nucleus of the accessory, which controls head movements.

(*B*) Certain fibres pass downwards to end around motor cells in the anterior horn of the spinal medulla—to explain alterations in muscle tonus.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on September 29, 1938.

The cerebellum is the centre of equilibrium and co-ordination fibres pass from the vestibular nuclei to the cerebellar cortex; to the nucleus dentatus then via the brachium to the red nucleus of the opposite side; whence via the rubro-spinal bundle they cross the middle line to the motor cells in the spinal medulla.

Thus each half of the cerebellum has a connection with the motor cells in the medulla of the same side.

Before I proceed to consider pathology or disorders of the vestibule, a short review of its normal function recalls that even today a good deal of the theory concerning it contains an element of conjecture. The semicircular canals, saccule and utricle are the organs concerned; and while knowledge of the canals is more exact, there is still a great deal of doubt about the saccule and utricle. Indeed the saccule is probably not at all concerned with equilibrium. In health both labyrinths work equally and in a complementary manner, so that a disturbance of labyrinthine origin must be due to irritation of one organ, causing it to overact, or to depression or suppression of its activity, in which case the symptoms arise from insufficiently opposed or unopposed action on the part of the sound labyrinth. For example, in total destruction of the right labyrinth by disease the symptoms arise from the unopposed action of the left side. It should be mentioned at this stage that such effect will not continue but will cease in a period of from three to fourteen days. The importance of this fact is that in inquiring into the history of a patient who is suspected of having a dead labyrinth on one side, definite questions must be directed to the possibility of there having been such a disturbed period in the past. A patient may have satisfied himself at the time that the disturbance was due to a digestive disorder, and the possibility of its being labyrinthine in origin may be resisted, if not actually resented.

Since there is very little known about the function of the utricle and of the otoliths we shall confine ourselves for the present to consideration of the semicircular canals. These are three in number in each labyrinth, and are commonly called "external", "vertical" and "posterior"; they are also known as horizontal, sagittal and coronal, since they lie more or less in those planes.

The symptom of labyrinthine disturbance that is most readily identifiable objectively is nystagmus. This associated rhythmic movement of both eyes consists in a slow movement, which is caused by the lesion, and a return jerk, which is in the nature of a reaction. The nystagmus is named, quite illogically, by the direction of this jerking back because it was the first movement to be described. Vertigo of labyrinthine origin is always accompanied by some degree of nystagmus. Further, if the nystagmus has a vestibular origin it must be of a compound nature, for example, horizontal and rotatory. It is never a simple horizontal or simple rotatory nystagmus.

Certain laws govern the causation of nystagmus by labyrinthine stimulation; they are as follows:

Flouren's Law.—Each semicircular canal provokes reflex movements of the eye in the direction corresponding to its own plane.

Ewald's Laws.—(1) Maximal stimulation causes nystagmus to the same side, minimal stimulation to the opposite side. (2) In the horizontal or external canals movement of the endolymph towards the ampullated end is the maximal stimulus, and toward the smooth end the minimal stimulus. (3) For the vertical and posterior (sagittal and coronal) canals movement towards the smooth end is the maximal, toward the ampullated end the minimal stimulus.

This latter has its application in the practical use of the caloric test. In the first place it is customary to apply cold, since this gives a minimum stimulus to the posterior canal and makes the patient less uncomfortable. It causes nystagmus towards the opposite side. Should it be necessary to test the labyrinth of a patient who already has a spontaneous nystagmus to the opposite side, hot douching will have to be used, and should, in the case of a still irritable labyrinth, cause cancellation of the spontaneous and commencement of a new nystagmus towards the tested side. If the hot douche fails to produce this effect it is probable that the tested labyrinth is unresponsive to stimuli.

Although the test is most frequently made with cold water, Dundas Grant's very simple cold air douche is useful, especially when there is a dry perforation of the ear drum.

For practical purposes it is proposed to refer only to the caloric test, which is the most frequently used. The rotation test is a valuable one; but since the results depend on the sum of bilateral reaction the meaning is not so easily interpreted.

Classification.

It is proposed to separate cases of aural vertigo into three groups: (i) those in which there is actual ear disease; (ii) those in which there is functional ear disease; (iii) cases in which there is no definite ear disease.

There are several sub-groups of group (i): (*a*) acute and chronic suppurative *otitis media* (in some of the latter there is a "fistula symptom"); (*b*) non-suppurative ear disease, for example, otosclerosis, chronic adhesive process of the middle ear; (*c*) actual labyrinthitis due to involvement in acute otitis or its spread.

Group (ii) includes such lesions as: (*a*) disturbance of the middle ear due to Eustachian lesions, nasal catarrh, enlargement of the posterior end of the lower turbinal, neoplasm in the nose or post-nasal space *et cetera*; (*b*) toxic effects on the labyrinth due to focal sepsis, general ill health, specific poisons like tobacco, alcohol or drugs, localized manifestations of syphilis.

Group (iii) will include (*a*) tumours of the eighth cranial nerve, and (*b*) functional disturbances, for example, vascular abnormalities.

Determination of Cause.

At the onset of acute *otitis media* vertigo may occur, especially when there is a very intense invasion. It usually does not last very long and settles down without any special treatment.

When vertigo occurs in a patient who has chronic suppuration of the middle ear, it may mean inflam-

matory irritation of the labyrinth. Frequently chronic suppuration leads to erosion of the external semicircular canal and a localized labyrinthitis. This is especially likely to occur in tuberculous patients. Of course, extension of the suppurative disease intracranially and the formation of a cerebellar abscess can also cause serious vertigo.

Labyrinthitis can commence as a localized inflammation, around a fistula, which can become generalized. This can at first be a serous inflammation and either settle down or become purulent. At this stage the patient suffers considerably from vertigo, and the stage is called the "manifest stage". When the symptoms pass off in the next week or two the patient enters into the latent stage, which can last for years without any symptoms at all.

It must be mentioned also that in chronic suppuration, or after a radical operation on a mastoid, the labyrinth is exposed by the defect in the drum membrane and is likely to be affected by cold atmospheric air and particularly by cold water during bathing. Patients should be instructed to protect themselves against this inconvenience.

Much has been written about the effects of focal sepsis, especially in teeth and tonsils, and their influence in producing vertigo. Wright, of Bristol, is a firm believer, and likens the labyrinthine disturbance to iritis. It seems to me, however, that the analogy is incomplete; that is to say, while focal sepsis undoubtedly does contribute in some cases there is no justification for ruthless extermination of teeth and tonsils as a first line of treatment.

Syphilis appears to be much less common than formerly; but it must be remembered. Deafness due to syphilis is frequently sudden in onset. Of tumours of the auditory nerve little need be said beyond noting that the symptoms of deafness, vertigo, tinnitus and facial palsy are persistent and progressive.

It is the last group of all that is most troublesome to the clinician. These are the patients usually described as suffering from "Ménière's disease". Their disturbances are of varying intensity and duration. Most frequently their distinguishing features—deafness, tinnitus and nystagmus—are entirely overlooked during the attack and have quite subsided by the time a consultant is asked to help in the diagnosis. Unless the family physician is alert enough to note these symptoms carefully in the early part of the patient's illness their occurrence will be missed. At a later stage it is difficult to do more than guess at the real nature of the attack.

Labyrinthine vertigo is accompanied by some spontaneous nystagmus, and almost without exception there are some tinnitus and disturbance of hearing. These symptoms should be carefully sought and noted during the attack. If it subsides they may entirely disappear.

The vascular abnormalities that can cause vertigo include hypertensive disease; but vertigo is found more commonly when the blood pressure is low. It has been suggested that attacks might be due to vascular spasm, such as can be seen with the ophthalmoscope during an attack of migraine. Hæmorrhages can occur in the labyrinth; but the brevity of most attacks suggests that hæmorrhage is not very common.

Reference must be made to the theory of Mygind and Dida Dederding, namely, that certain persons suffer from a faulty mechanism for control of water metabolism. The theory depicts such persons as retaining an undue amount of fluid intake and actually drowning, so to speak, the vestibular organs. Mygind and Dederding offer as proof of their theory the abnormal increase in weight of such persons as a result of fluid intake; and they quote convincing figures of resultant improvement in regard to both hearing and vertigo as a result of reduced fluid intake.

Treatment.

Determination of the cause, or at least classification of the case, is a prime necessity in planning treatment. Careful and skilful examination, not only of the ears and nose *et cetera*, but a general survey of the patient, must be made. As this paper deals with aural vertigo, no attempt will be made here to enter into the difficulties of separating "aural" from "extraaural" vertigo. Suffice it to say that essential conditions have been laid down for considering a case to be "aural" in nature.

General treatment consists largely in sedation and is on customary lines. When there are accompanying abnormalities of the vascular system, these should have attention. With the exception of actual labyrinthine inflammation there is a tendency to recover in time; and frequently this spontaneous recovery is credited to whatever means may have been applied towards a cure.

The need for correction of nasal abnormalities—the removal of hypertrophied tissues, the correction of septal spurs, catheterization of the Eustachian tubes—frequently becomes obvious on routine examination. The results are usually good.

While it is admitted that most patients like to receive treatment during the period of their recovery, little commendation can be found for the old-fashioned remedy of blistering the surface of the mastoid. Just what influence this might be expected to have on the inside of the labyrinth it is difficult to imagine. Nevertheless it is still a frequently applied remedy.

The use of pilocarpine, given until free sweating results, is a well-tried remedy. Its value probably has some relation to total water loss, and its benefits are similar to those of water deprivation (Mygind and Dederding). The same applies to the often-advocated courses of hot baths, whether medicated or not.

The local application of diathermy has been tried but the results are not very good as a rule and frequently the tinnitus is made worse. Application of the galvanic current is often tried, and it appears to be soothing in some cases and to reduce

tinnitus. Its mode of action is both unknown and uncertain. There is some ground for belief that its action is by way of neutralizing electrical charges present in the labyrinth.

The very severe and crippling vertigo and tinnitus that may accompany otosclerosis and scarring of the middle ear may necessitate destruction of a labyrinth for the patient's relief. The horizontal canal is opened surgically and the end-organ destroyed by the injection of absolute alcohol. Such an operation is not devoid of risk; but the condition is desperate and the fatalities have been few. Division of the eighth nerve intracranially has been practised successfully without fatalities.

When accompanying suppurative otitis, vertigo may demand operation. The nature of the procedure to be followed depends on the result of tests of the labyrinth. When there is any activity present in the particular labyrinth (that is to say, if the ear still possesses any hearing or responds to caloric, fistula or turning tests), then the procedure may be a simple or a radical mastoid operation, according to requirements. Should the labyrinth prove totally unresponsive to all these tests it is quite inert and no such patient should have his mastoid operated upon unless the operation includes labyrinthotomy; otherwise suppurative meningitis is almost certain to follow in four days, and the result of this is, with few exceptions, death.

Reports of Cases.

In conclusion I quote briefly eight case histories with short notes of what they indicate.

CASE I.—A woman, aged thirty-five years, had a sharp attack of giddiness, causing her to take to bed. She had tinnitus and temporary deafness in the right ear. Examination revealed pronounced nystagmus to the right. Deafness was diminished by catheterization. There was great hypertrophy of the right lower turbinal at its posterior end; this was snared off. The patient recovered within forty-eight hours, and, so far as is known, has had no further attacks in the last six years.

CASE II.—A man, aged thirty years, always had severe vertigo during a visit to the Blue Mountains and on his return. His business caused him to go there every week. During one attack on his return to town he fell to the ground in the street and had difficulty in convincing a constable that he was not drunk. Resection of his nasal septum and cauterization of his lower turbinals were followed by cessation of symptoms.

CASE III.—A man, aged forty-four years, had a severe attack of dizziness with some deafness, and when he was seen a week later all symptoms had subsided except slight deafness. The physician had failed to look for nystagmus and to inquire for tinnitus at the time, and these symptoms were not present at the date of the later examination.

CASE IV.—A woman, aged thirty-eight years, had had deafness and discharge from her right ear for years. On examination the whole drum was found to be missing and the middle ear filled with granulations. There was pronounced deafness, but not a total loss of hearing. An active fistula symptom was also present. A radical mastoid operation was done, and the patient was very giddy for the next four days, with confused nystagmus. On the fifth day the patient became unconscious and died. Lumbar puncture, as well as opening the dura for drainage before death, showed the cerebro-spinal fluid to be very turbid. This patient evidently had a latent cerebellar abscess that burst, causing generalized meningitis. The labyrinth was not dead before operation.

CASE V.—A man, aged forty years, had large three-point exostoses in the right ear. These had been under observation for some time and had been causing trouble by pressing against each other. Removal was done by a radical mastoid operation. The bone was extremely hard and required a great deal of hammering. The patient during convalescence became very giddy and suffered from spontaneous nystagmus, which subsided in a fortnight. As a result the patient is totally deaf on the affected side. He developed a serous labyrinthitis as a result of his operation, which destroyed the hearing in this ear permanently.

CASE VI.—A man, aged sixty-four years, complained of severe dizziness and deafness and noise in the right ear. He had had a severe attack seven years before. He then had to stay in bed for nearly three weeks. He was treated with blistering over the mastoid and injections of pilocarpine. He had had slight attacks in the interim, but this was the first severe one. He had arteriosclerosis. He was advised to continue general sedation with small doses of phenobarbital. The blistering had little to do with his recovery from the former attack, which took place during the period of his treatment.

CASE VII.—A woman, aged seventy-two years, had a severe attack of dizziness accompanied by deafness in the left ear and tinnitus. After a week she had improved a little. She recovered quickly after catheterization on two occasions.

CASE VIII.—A man, aged twenty-nine years, a painter, had had a discharge from the right ear all his life. He had had some exacerbation of the discharge and severe dizziness for three weeks. On examination the hearing in the affected ear was found to be impaired. There was slight spontaneous nystagmus to the affected side. The response to the fistula test was very active. A radical mastoid operation was performed. Granulation was found at the site of the external semicircular canal. Healing was uneventful, except for the presence of slight dizziness for three or four days. The result was recovery, with absence of dizziness, after healing. He now feels safe on a ladder again. By operation a circumscribed labyrinthitis has been cured.

ANÆSTHETICS IN AUSTRALIA IN THE EARLY DAYS.

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Introduction.

FROM time to time statements are published in Australia as to when, where, and by whom ether and chloroform, respectively, were first used in Australia as general anæsthetics.

A good many years ago the writer had occasion to examine old files of colonial newspapers in a matter indirectly concerned with the administration of anæsthetics in Australia. Notes were taken then of the first reports so published of surgical operations performed under ether and under chloroform.

The examination of these newspaper files commenced with that of *The Sydney Morning Herald* for the last quarter of 1846 (issued prior to the introduction of ether to surgical practice by Morton), and was continued through subsequent files until the issue of March 31, 1849, when the immediate object of the search was effected. Except *The Sydney Morning Herald*, no single newspaper was available continuously for the period dealt with; but when one was missing another fitted in to provide a

continuous story for the territory concerned, from January 1, 1847, to March 31, 1849. Papers from Western Australia and Queensland, then the Moreton Bay district of New South Wales, were not available, and South Australian papers were available for but thirteen months of the time covered; but extracts from them, and reports from local Press correspondents, appeared at intervals in the journals examined.

In *The Argus* (Melbourne) of July 8, 1933, the late Dr. George T. Howard contributed an article bearing on the subject.[1] The above-mentioned notes of Press reports were checked carefully then, and a résumé of them contained in a letter was published in *The Argus* a little later, commenting on Dr. Howard's article. In this letter Dr. Pugh and Dr. McEwan are credited with being the pioneers in this country in the use of ether and of chloroform respectively.[2]

A review appearing in THE MEDICAL JOURNAL OF AUSTRALIA of April 23, 1938, of Dr. K. Macarthur Brown's book "Medical Practice in Old Parramatta", contains the following statement:

> Dr. Brown makes a further claim for two Parramatta surgeons. He states that Dr. Rutter and Dr. Gwynne administered chloroform to patients in 1850. This antedates the usually accepted first administration at Sydney Hospital by Dr. Alleyne in 1852. The early history of anæsthesia in Australia is still vague, and research is badly needed among the old contemporary papers and letters.

In Dr. J. Frederick Watson's book "The History of Sydney Hospital" occurs the following statement:

> In the year 1852 the first administration of chloroform was made by Dr. H. G. Alleyne. Although not a member of the staff, in this year he successfully administered it to a girl during an operation for amputation of the leg for strumous disease. The introduction of this priceless boon to the patient and the surgeon was rapidly followed by its general use . . . .

It is not clear from this passage, nor from the context, whether the author intended to suggest that Dr. Alleyne, not being a member of the honorary staff of the hospital, administered the first chloroform given within its walls, or to convey the suggestion that in a history it was worthy of mention that the staff had included one who, before his election thereto, had gained distinction as the first to administer chloroform, somewhere. Would the claim be for Sydney, the territory now known as New South Wales, or for the whole of Australia? Nor is it clear whether the author meant to credit Dr. Alleyne with introducing chloroform to the medical profession of Australia, or merely to refer in a general way to the world-wide benefit to mankind that followed its first use by Simpson. In any case, this paper contains no evidence in support of any statement on behalf of Dr. Alleyne in the matter.

The late Dr. Norman J. Dunlop, in an attractively written essay,[3] considers it "incredible that chloroform should have remained unknown in these lands until 1852", and continues:

> The full story of the advent of chloroform to Australia might some day be unfolded as the result of further research, when the space between the years 1847 and 1852 will be spanned.

This article may help to unfold the story. (In a letter published in the same issue of THE MEDICAL JOURNAL OF AUSTRALIA Dr. Dunlop stated that, since completing his essay, he had received information that Dr. Pugh of Launceston had operated there for cleft palate and hare-lip, using chloroform, in 1849, prior to August of that year.)

Searches and Records.

It seemed that the likelihood of these records' being complete would be greater, and that their value and authority would be increased, if a direct examination were made of Moreton Bay and Western Australian newspaper files for the period from January 1, 1847, to March 31, 1849, and of the files of *The South Australian Register* of that period not held in Melbourne. Therefore, the principal librarians of the Brisbane, Adelaide and Perth public libraries were applied to recently, and they very courteously and promptly had the necessary searches carried out. The research at Perth comprised the whole of the years 1847 to 1849, inclusive, and in addition the records of the Colonial Secretary's Office for the whole period from 1847 to 1849 inclusive.

This paper, therefore, is based on an examination by the writer and others of the representative newspapers of the centres that were or later became capital cities, and of some provincial centres. As transcripts no doubt the records are free from error and, probably, no entries were overlooked; but it must be borne in mind that odd numbers are often missing from old files.

In this way particulars were obtained from the Australian public Press of forty-three operations performed in Australia during the years 1847, 1848 and the first quarter of 1849 — probably all so recorded. To them have been added two from a private manuscript, making a total of forty-five. These forty-five cases comprise twenty-one operations under ether (in fifteen reports), and twenty-four operations under chloroform (in twenty-one reports). They are set out below, and show that twenty-one individual surgeons had operated in Australia using general anæsthesia by January 20, 1849.

These reports show that an operation was carried out under ether in the Sydney Infirmary (now the Sydney Hospital) in 1847, and that there were two operations (probably three or four) under ether in the same institution in 1848; also that three operations were performed under chloroform in 1848 in Sydney, one at the Infirmary and two at the Benevolent Asylum.

The first instance of the use in Australia of ether in surgery by a medical practitioner was recorded in *The Launceston Examiner* of June 9, 1847. The report states that on June 7, 1847, Dr. Pugh, at Launceston, operated on two patients under ether. The first operation was the removal of a tumour of the jaw, anæsthesia being very fair; the second was for cataract, and anæsthesia was good. The article dealing with the matter makes the following statement:

We were present on Monday last when the first surgical operations ever attempted in the Colony while the patient was under the influence of ether were performed.

The first instance of the use in Australia of chloroform in surgery by a medical practitioner was recorded in *The Sydney Morning Herald* of April 12, 1848. It was reported that on April 11, 1848, Dr. McEwan operated in Sydney using chloroform, the anæsthesia being very good. The nature of the operation was not specified, but it was said to be "most tedious, difficult and hitherto excruciating".

It is seen that Pugh operated in Australia, using ether, eight months after Morton first administered ether for surgical purposes at the Massachusetts General Hospital, and but five and a half months after Liston amputated through the thigh with the patient under ether anæsthesia at University College Hospital, London. This was its first use in major surgery in the United Kingdom. It is also seen that McEwan operated in Australia, using chloroform, but five months after its introduction to surgical practice by Simpson at the Edinburgh Royal Infirmary.

Why Did Not the Use of Ether and of Chloroform Increase in Steady Progression?

Inspection of these reports shows that, after the early cases had been made public, a falling off occurred in the number of surgical operations performed under general anæsthesia, and so recorded. This applies to the use both of ether and of chloroform, but particularly to that of chloroform. That is to say, in so far as these reports may be taken as an index, there was no progressive increase in popularity of either anæsthetic for the period covered by this article. Twenty-one operations under ether were performed in ten months, thirteen during the first five months, eight during the last five months. Twenty-four operations were performed under chloroform in ten months, twenty during the first five months, four during the last five months.

In a Hobart Town paper of November, 1847, the following significant statement appears:

Although we have not heard much lately [of ether anæsthesia] it is by no means abandoned by our Colonial surgeons.

Ether.

In the case of ether, no hostile criticism of its use as an anæsthetic agent had appeared in the public Press. There had been some unsuccessful cases, and a warning hint had been given as to its inflammability. "A painless operation may have a very painful ending." Dr. Pugh shortly after his operations herein recorded, had written to the public Press[4] deprecating the general use of ether as an anæsthetic, advising a careful selection of cases, and expecting it "like its twin brother, nitrous oxide, to enjoy a short-lived notoriety". A letter written by a medical practitioner to a London paper had been quoted, to the effect that the inhalation of ether seriously affected the blood, and tended to produce pulmonary tuberculosis. The Press showed no diminution of interest. *The Sydney Morning Herald* of March 3, 1848, in an article reporting four recent cases of operation under ether, stated that prior to these there had been anxious inquiry by the paper (implying non-success) during some nine months for further information as to new cases, presumably in Sydney. The article concluded by expressing the opinion that "the medical gentlemen concerned are bound . . . to place the particulars on record in an authentic shape". Into these last words might be read a suspicion, strengthened by the fact that after so long an interval four new cases had been heard of in the past month, that information had been withheld from the Press in the matter. But a few weeks later, with the advent of chloroform, operations under that anæsthetic were reported freely in the Press for a time, the first three from Sydney.

The view of the medical Press is presented in two articles (reprinted in Dr. Dunlop's essay[3]) appearing in the *Australian Medical Journal*. In its issue of June, 1847, definite opposition is expressed as follows:

For minor operations in surgery we would consider any such measures unnecessary: in the more important ones we think it will be found not infrequently conducive to secondary consequences of a grave character, even if it do not in many constitutions produce effects of a mischievous nature. . . . We have no hesitation in predicting for this process a transient popularity: it will have its day, ultimately to be abandoned as useless or injurious.

The second article, in the following month, shorn of non-essentials, may be read as a plea for discrimination in the use of ether; but what lay in the mind of the editor is better indicated by the title "The Ethereal Humbug" given to a letter (also reprinted in Dr. Dunlop's article[3]) from Dr. Pugh published in the same issue. The caption is not justified by the contents of the letter, which, from advising discrimination, passes to serious warning:

I would now desire to caution the profession against the employment of ether inhalation in persons in any way disposed to apoplectic disease. . . . I have arrived at the conclusion that if the effect be not immediately induced, a continuation of the inhalation cannot be pursued without danger and serious consequences.

Pugh makes no further explanation.

There is no record in *The Launceston Examiner* or any other Australian newspaper examined for the period, of a death under ether, or directly or indirectly following its administration.

The attitude of the *Australian Medical Journal* does not appear to have been reflected in the lay Press, but no doubt influenced the medical profession in a general way, and accounted for the apparently waning popularity. The temporary abandonment of ether, coinciding with the advent of chloroform, seems to be explained by the wide publicity given to the latter agent as having superseded ether on account of its possessing many advantages.

Chloroform.

In the case of chloroform, apart from some reports of unsuccessful attempts to induce anæsthesia, uneasiness can be understood. In June, 1848, an account appeared in the Press of adverse effects of

the anæsthetic after tooth extractions at Geelong. The account suggested much exaggeration by an hysterical patient. But in another month publicity was given in the local Press to several deaths that had occurred in England during the administration of chloroform, a report of the coroner's inquest in one of the cases occupying two columns of *The Colonial Times* of July 11, 1848. Two such deaths had occurred in Australia, and had been the subject of inquiry followed by full Press reports; the finding in each case was that chloroform had caused death. The first of these deaths occurred on July 22, 1848, at Windsor, New South Wales, whilst the right common carotid artery was being ligated as a preliminary to a proposed excision of a cancer of the mouth. The second death occurred on September 28, 1848, at Launceston, Van Diemen's Land, during the operation of tracheotomy, undertaken to relieve a patient suffering from "chronic disease and infiltration of the larynx".

For the period covered by this review, in Sydney, the most populous centre in Australia, five patients only were reported as having been operated on by medical practitioners under ether and but three under chloroform.

Pioneers.

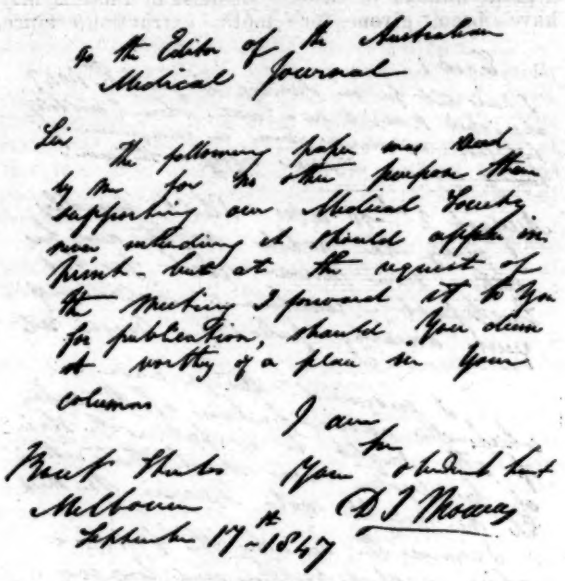
Here it would be appropriate to bring to light, or return to light, amongst others, something of the career of McEwan, of Sydney, and of Agnew, of Hobart Town, who made early use both of ether and chloroform, and of Buchanan, of Port Stephens, who wrote as follows to Captain King, of the Australian Agricultural Company:

> I wrote to you on 21st [doubtless June, 1847] about a man named Hickey who was brought into the [Australian Agricultural] Company's Hospital with popliteal aneurism and requesting you to make enquiry about his being admitted into the General Hospital, Sydney. . . . Finding that the aneurismal tumour continued to increase very rapidly and the man suffering great pain I thought it would be better to operate at all hazards, so I performed the operation, and not being sure of the kind of apparatus used for the inhalation of ether, I tried the simple bladder with mouthpiece, similar to what is used in the inhalation of nitrous oxide, or laughing gas, which answered the purpose admirably. (I must tell you that I first tried it myself, which convinced me as to its efficiency.) . . . the artery was cut down and tied in the usual way, the patient breathing all the time as if in a deep sleep . . . the operation . . . took about five minutes . . . he . . . said he . . . did not suffer the slightest pain. I am happy to say the man is doing remarkably. . . .

Biographical notes, however, are not within the scope of this article. Buchanan and Pugh rather reveal themselves; Thomas distinctly does.

Thomas of Melbourne.

Dr. Thomas's operation (amputation) in Melbourne on August 2, 1847, was referred to in the Melbourne Press of August 4, 1847[5] as "the first surgical operation under ether at Port Phillip" (now Victoria). He later made the claim himself: "I was the first to administer ether . . ." (at Port Phillip).[6] His experience in that operation and in four others under ether formed the basis of an optimistic paper read by him before the Port Phillip Medical Association on September 7, 1847, the original manuscript of which is in Melbourne in the possession of the Victorian Branch of the British Medical Association; extracts are reproduced herein. Thomas gave the ether in all five cases, and operated as well in two of them. His paper was not an attempt to glorify the prowess of those who


To the Editor of the Australian Medical Journal

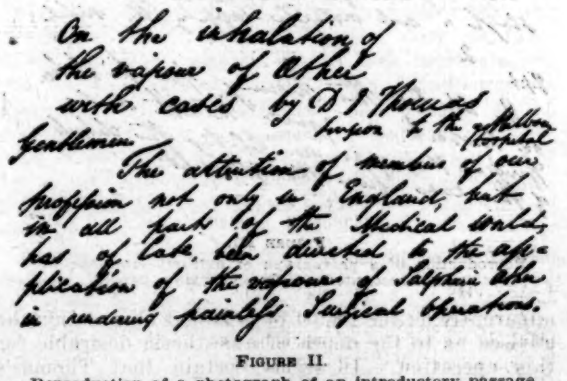
Sir The following paper was read by me for the other purpose than supporting our Medical Society was intending it should appear in Print - but at the request of the Meeting I present it to you for publication, should you deem it worthy of a place in your Columns

I am Sir Your obedient Servt
Melbourne D J Thomas
September 17th 1847

FIGURE I.

Reproduction of a photograph of Dr. Thomas's letter offering his paper of September 7, 1847, for publication.

had dared to adopt the new method in surgery, but a plea to practitioners to be discriminating in the use of the anæsthetic, and be guided by the physical condition and temperament of the patient. He pursued his theme in a philosophic way, and prefaced an account of the five cases with the words: "I shall now read a few cases which have been acted upon differently by the ether vapour." He then


On the inhalation of the vapour of Ether with cases by D J Thomas Surgeon to the Melbourne Hospital

Gentlemen The attention of members of our profession not only in England, but in all parts of the Medical World, has of late been directed to the application of the vapour of Sulphuric Ether in rendering painless Surgical Operations.

FIGURE II.

Reproduction of a photograph of an introductory passage in Dr. Thomas's paper.

described the effect of inhalation of the drug on a patient exhausted by shock, hæmorrhage, pain and sepsis, and on four others of temperaments

respectively sanguineo-nervous, bilious, sanguineo-melancholic and sanguineous. They are included with those tabulated below. Three were taken from Press reports, and two, not published, from Dr. Thomas's original manuscript. These five cases did not constitute his whole experience at the time, because he there wrote: "I have given it [ether] in a great number of cases." In most of these it may have been given for tooth extraction, since,

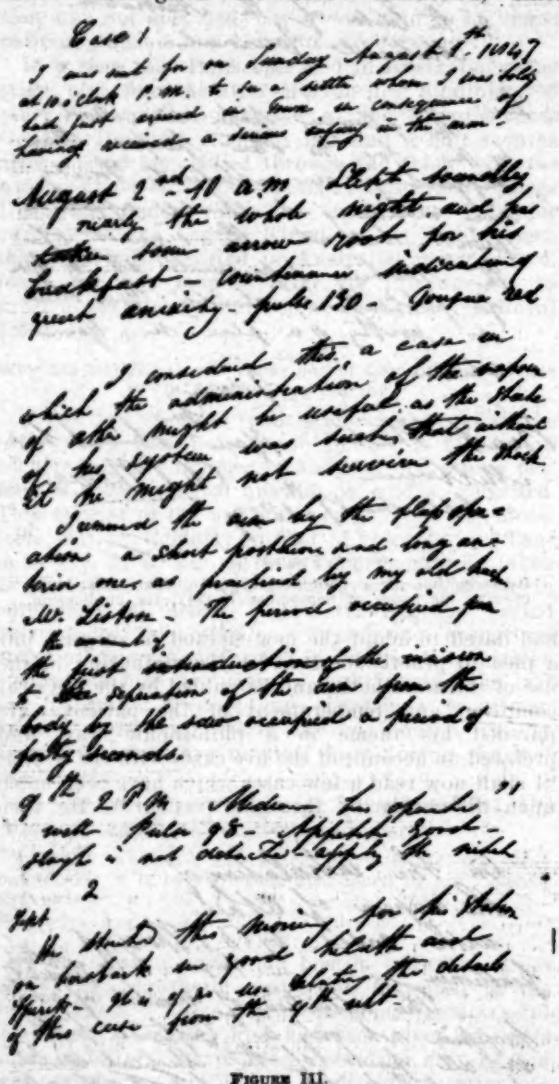


Figure III.

Reproduction of a photograph of extracts from the first case recounted in Dr. Thomas's paper.

apparently as the result of personal observation, he advised as to the depth of anæsthesia desirable for this operation. It seems certain that Thomas's amputation, on August 2, 1847, was the first major operation performed under general anæsthesia (ether) at what then was the Port Phillip district of New South Wales. It appears that Dr. Thomas's paper was never printed because the *Australian Medical Journal* ceased publication during the month following its reading. The late Dr. A. Jeffreys Wood regarded it as the first paper of any importance read before the Port Phillip Medical Association.[7] The late Dr. George T. Howard regarded it as the first.[1]

The original reads as if it were the first; but the author does not state that this is so, nor is it so referred to in the discussion that followed, as recorded in Dr. Thomas's manuscript. The minutes of the meeting, however, are not available; the whereabouts of the minute book containing them and those of other early meetings (the association was formed on May 16, 1846) appears to be unknown.

Other Pioneers.

The operation of Dr. Bayer at Adelaide on September 30, 1847, was announced in the Press as "the first operation we have heard of in which ether was used in this colony".[8]

Mr. Belisario, a dentist, had extracted many teeth, including bad stumps, in Sydney, using ether, before the operations in June, 1847, carried out under that anæsthetic by Dr. Buchanan at Port Stephens and by Dr. McEwan at Sydney.

Dr. Dunlop brackets Belisario, Nathan and Pugh as sharing "equally the honour of introducing anæsthetics (by way of ether) to Australia and Tasmania".[3] On June 15, 1847, *The Sydney Morning Herald* published a letter from Dr. Nathan, dated June 14, 1847, in which he stated that "within the last few days" he had witnessed "nearly 40 painless operations" under ether. These were tooth extractions by Mr. Belisario. In the same issue Belisario announced that he used ether in his practice to eliminate pain. These were the first references to ether administration in Sydney. A "few days" prior to June 14, 1847, brings the date of the tooth extractions very close to the date of Dr. Pugh's first operation under ether on June 7, 1847. Vessels from overseas in those days frequently, if not invariably, called at Van Diemen's Land before reaching Sydney. The accident of geographical position no doubt gave to Dr. Pugh what appears to be some days' priority in the matter; but the interval seems too short for Belisario to have followed the initiative of Pugh.

Belisario's advertisement goes on to say that for the purpose of "ethereal inhalation" an apparatus was constructed "by himself in conjunction with an experienced medical gentleman of the city, who was also kind enough to superintend his first operations". This reads, almost, as if the medical man had given the ether on the first occasions; a later news item identifies him as Dr. Nathan. Between Nathan and Belisario there is no information as to who suggested using ether, nor is there any mention of Nathan's having administered ether in an operation by a medical practitioner; but he is the first recorded herein as having administered chloroform in Australia.

Dr. Thomas, in his address to the Medical Society of Victoria as retiring President, on January 11, 1865, in Melbourne, said: "I was the first to

administer . . . chloroform" (referring to his work at Port Phillip).[6] This may have been for Dr. Greeves, on May 13, 1848, whose operation on that date is the first under chloroform at Port Phillip recorded herein, the anæsthetist not being named.

Dr. Wilkie was mentioned in *The Port Phillip Gazette* of May 22, 1848, as having used chloroform with success in several cases.

The Swan River.

No reference was found to the use of general anæsthetics in Western Australia during the period under review; but the Colonial Surgeon of the time, evidently, was interested and alert. Dr. Battye and Mr. V. L. Dean, of Perth, report that on April 13, 1848, the surgeon requisitioned twenty-four ounces of chloroform;[9] that was but two days after McEwan carried out in Sydney what appears to have been the first operation under chloroform in Australia. Mr. F. I. Bray finds it stated by some that Dr. John Ferguson "used chloroform for the first time in Western Australia when he amputated the leg of a native in the forties". The fact that Ferguson was the Colonial Surgeon referred to above adds weight to the statement.

Is Queensland the Cinderella?

Similarly, in the case of the Moreton Bay district of New South Wales (now Queensland), examination of appropriate newspaper files revealed no evidence, direct or indirect, of the use of general anæsthetics in the period concerned; nor did an examination by Miss Leeson (Mitchell Librarian of the Public Library of New South Wales) of the records (now in the Mitchell Library) of the Colonial Secretary's Department, and of the Colonial Treasury, relating to the district.

Dr. A. H. Marks, of Brisbane, quotes the very cautious suggestion of the late Dr. E. S. Jackson, that when Dr. Hobbs gave chloroform in 1854 at the Brisbane General Hospital, for Dr. Barton to operate on a patient with extensive cancer, the occasion may have witnessed its first use in the hospital and in Brisbane.[10] But that was seven years after ether was first used as a general anæsthetic in Sydney, and six years later than the first use of chloroform there. Now Dr. Barton was at the Moreton Bay settlement (Brisbane) during the period under consideration here. Dr. Ballow, a conscientious officer in charge of the hospital, was also there. He cooperated professionally[11] with Dr. Cannon, an able surgeon, and with Dr. Simpson, a former army surgeon, who had seen service. The population there at that time would be from 1,000 to 2,000. The opportunity for an early trial of general anæsthesia in surgery must therefore have presented itself, and the men to grasp it were there. It seems unlikely that they would let it pass.

Dr. Jackson had access to the hospital records over a very long period; his examination was keen and careful. Had there been continuity of appropriate records, he would not have been guarded in his opinion. It seems obvious that there was not such continuity.

In the late forties the hospital underwent a transition from a government institution (Her Majesty's Government Hospital) to a public charity (Brisbane General Hospital).[12] This would not at the time provide an atmosphere making for scientific inquiry. It was closed on January 31, 1848.[13] Dr. Ballow's appointment as first resident surgeon of the Brisbane General Hospital on January 12, 1849, indicates its reopening.

Surgical operations, however, were not necessarily confined to the hospital, and with it closed, more, presumably, would be done without its walls. The silence of the Press in the matter of anæsthesia at Moreton Bay, during the period covered by this paper, seems more significant than the absence of hospital records.

Further search, and the unearthing of old documents and family papers, may show the surgeons of Moreton Bay to have been no less enterprising than their brethren in so many other parts of Australia.

Did Buchanan or McEwan First Operate Under Ether in New South Wales?

It is a fine point in these records whether Buchanan, of Port Stephens, or McEwan, of Sydney, first used ether in operating in New South Wales. An exact date appears not to be available in either case. McEwan is reported as having so operated a few days before June 28, 1847. Buchanan, in the letter to Captain King, of the Australian Agricultural Company, published in *The Sydney Morning Herald* on July 6, 1847, quoted above, mentioned having written earlier from Port Stephens, doubtless on June 21, 1847, inquiring whether his patient could be admitted to hospital in Sydney if sent down, and, if not, requesting certain instruments to be sent to him so that he could operate himself. The wording of the published letter ("I wrote to you on 21st") suggests that it was written in June, therefore not later than June 30, 1847; and its tenor suggests that it was not written immediately after the operation, the date of the operation thus being carried back a little. The statement that the aneurysm "continued to increase very rapidly" after "the 21st" implies that it was increasing in size very rapidly on that date, and indicates an operation soon after "the 21st", particularly as the man was suffering great pain. A date, presumably soon after June 21 (Buchanan's operation), and one a few days before June 28 (McEwan's operation), bring the two operations very close to one another.

There is no record in the shipping news of *The Sydney Morning Herald* of a vessel's having arrived in Sydney direct from Port Stephens between June 21, 1847, and July 6, 1847. Therefore the letter published must have come by an indirect route. This fact points probably to an earlier writing than would have been called for by transit by a direct route. There is no information as to how long this letter remained in the hands of Captain King before portion of it was passed on to *The Sydney Morning Herald* for publication.

The records now available of the Australian Agricultural Company contain no reference to the matter, although copies of the original dispatch books for the very early and later years are held. The book containing copies of its correspondence for the year 1847 and other years about that time cannot be found. The exact date, then, of Buchanan's operation cannot at present be given, nor can that of McEwan's.

It is not possible, from the records known to be available at the time of writing, to be certain, but it seems likely that, in the use of ether, Buchanan forestalled McEwan by a day or two.

Miscellaneous.

Dr. Ward, in administering chloroform for tooth extraction on June 19, 1848, is credited with being the first to use it in Launceston. Publicity was given in the Melbourne and Geelong Press, in 1848, to tooth extractions under chloroform by Monsieur Beurteaux; but several Melbourne surgeons had already used chloroform for operations at the time.

Dr. Bedford's operation on October 13, 1847, at Hobart Town, on a boy, aged six years, was reported in a Melbourne paper as performed on the youngest person known to the writer to have inhaled ether for that purpose, and was attributed to Dr. Crowther and Dr. Agnew; but *The Courier* (Hobart Town) does not mention the latter surgeons in a report of what appears to be the same case.

In announcing Dr. Crowther's operation included herein, *The Courier* stated that Dr. Crowther had again performed lithotomy on July 10, 1848, the patient being given chloroform, and suffering very little. A report of this earlier lithotomy could not be found. Since no evidence was forthcoming as to its having been performed under a general anæsthetic, the earlier operation is not included amongst those recorded here.

Continuous administration of ether was not practised by most, but once unconsciousness was produced, it was discontinued and the surgical operation was carried out rapidly. Should consciousness return, more anæsthetic would be given. Thomas, however, when stertorous breathing commenced, allowed the patient to breathe air by the nose and ether by the mouth, and continued the administration in that way.[14]

Dr. Pugh used a glass vessel containing sponges saturated with ether. As was usual at the time, the patient inhaled through a pipe placed in the mouth, the nostrils being compressed. Dr. Nathan and Mr. Belisario collaborated in making an ether apparatus in Sydney, and one was invented by Mr. Cane in Hobart Town. Dr. Buchanan poured the ether into "a simple bladder with a mouth-piece". He had tried it on himself before administering it to the patient. Dr. Thomas did likewise: "I have taken it frequently myself." His ether chamber was provided with a hole guarded by a slide to allow of a regulated air supply.

Chloroform was given on a handkerchief, cloth or sponge. One drachm commonly was poured on and repeated should unconsciousness not ensue or should consciousness be regained during the operation. There is no record of more than two drachms' having been used in the operations included here. In one case a veterinary surgeon deposed that he "had been asked to give the time by a watch for the application of the chloroform", and that "the handkerchiefs were changed every thirty-five seconds, then forty and fifty seconds"; but he did not say how much chloroform was used.

In 1848, in Melbourne, Mr. Hood and Mr. Brisbane produced between them an apparatus for the inhalation of chloroform. On May 25, 1848, Mr. Rowling lent his apparatus of silver, "made expressly for the administration of chloroform", for use during the operations of that date here recorded. This was no doubt Mr. C. W. Rowling, a chemist, of Elizabeth Street, Melbourne. Dr. Greeves perfected his own apparatus.

Bishop Nixon, returning in 1848 from a visit to England, brought out with him a small portion of chloroform, which he gave to Dr. Bedford and Dr. Crowther. It is said to have been the first to reach Van Diemen's Land, but there appears to be no record as to when it was used. It could hardly have been the first administered there, because that used in Hobart Town in the operation recorded herein, of May 19, 1848, the day the bishop landed, was made by Mr. Capern, chemist.

Mr. Hood, a chemist, at Melbourne, Mr. Norrie, a chemist, at Sydney, and Mr. Capern, a chemist, at Hobart Town, prepared chloroform.

Chloroform was used in Hobart Town for tetanus by Dr. Agnew, Dr. Baylie and Dr. Officer in June, 1848. In the same year it was used at Melbourne for accouchements, probably before July.

In the newspaper reports it is not clear in some instances whether a surgeon's colleague was present as anæsthetist or as assistant.

It was noticed in some Press reports of operations that no mention was made of an anæsthetic's being administered, although on an earlier date the surgeon concerned had operated under general anæsthesia. Those cases are not included here.

The Two Thomases.

Dr. David John Thomas, F.R.C.S. (England), surgeon to the Melbourne Hospital, a Welshman, frequently mentioned in this article, who read a paper on ether anæsthesia in 1847 before the Port Phillip Medical Association, must not be confused with John Davies Thomas, F.R.C.S. (England), a Welshman, who, when resident surgeon to the Clunes Hospital, read a paper on ether and chloroform anæsthesia before the Medical Society of Victoria in 1875. Later he became physician to the Adelaide Hospital and an authority on hydatid disease.

N. J. Dunlop's Essay.

Dr. Dunlop's article, already referred to, includes a great deal of information concerning the introduction of general anæsthesia to surgical practice, particularly the entry of chloroform into the

United Kingdom, and of ether in this country. It also includes biographical notes of some of those associated with the early use of ether in Sydney and Launceston (Pugh, Nathan and Belisario), reprints in full of letters and articles in the lay and medical Press concerning the matter, full particulars of Dr. Pugh's first cases, and an illustrated description of an early ether apparatus. It is valuable as a reference, because details from widely scattered sources not to be explored by most are here brought together. Through these staid items of biography and record the author threads his story in a graphic way.

He says little about the first use of chloroform here, probably because there is little in print. The *Australian Medical Journal* had ceased publication, and those whose opinions it had voiced, finding themselves, as it were, inarticulate in their own tongue, perhaps declined to become vocal in the language of the public Press.

The statement that Alleyne was the pioneer of chloroform anæsthesia in New South Wales is not justified, at least in those bald words. These pages contain records of eight operations carried out under chloroform in the territory now known as New South Wales, by five different surgeons, by January 20, 1849, that is, before Alleyne's use of it in 1852.

Since but four men are named in the matter of general anæsthesia in Australia, Dr. Pugh, Dr. Nathan and Mr. Belisario, dentist, in connexion with ether, and Dr. Pugh (in the above-mentioned letter), and Dr. Alleyne in connexion with choloroform, there appears to be room for a contribution of the nature of this article; it should help to tell the story.

Dr. Dunlop properly restricts the term "Australia" to the mainland and does not include Tasmania in it. Hence, when he states that Belisario was the first to administer ether in Australia, he evidently does not mean to convey that Belisario's use of ether preceded the use of it by Pugh at Launceston.

(In the present article Australia is to be understood to include the present Tasmania, and where Pugh is credited with being the first to use ether as an anæsthetic in Australia, and McEwan chloroform, the word "Australia" has that expanded significance.)

Conclusion.

The story of general anæsthesia in surgery in this country, from the point reached in this paper to that when it became definitely accepted, and, as a matter of course, the concomitant of practically every major surgical operation, may perhaps not be told easily. With increasing popularity the subject would lose its novelty and soon fade as a matter of public interest, so that reports would disappear from the newspapers. Dependence then would fall on the presence of hospital records during the period, their quality and preservation.

This paper, then, records a search primarily of early Australian newspapers, at least from March 1, 1847, to March 31, 1849, to ascertain the extent to which surgeons in Australia availed themselves of general anæsthetics in the earliest period of their use. It reports as well two cases not announced in the Press, and tells, since the Western Australian and Moreton Bay papers of the time contained no information about the matter, of a spread of the search to include examinations of official documents for indirect evidence; the search at Perth was successful, but that at Sydney regarding Moreton Bay was unsuccessful in so doing.

There are no records in the paper now presented of operations under ether in this country after the first record in it of the use of chloroform in Australia. The last case of ether anæsthesia noted is an operation on April 3, 1848, at Melbourne, by Thomas. Two days later, on April 5, 1848, Press reports appeared in Australia quoting English papers to the effect that chloroform had superseded ether as a general anæsthetic. All subsequent reports are of chloroform anæsthesia, commencing with that of McEwan's operation in Sydney on April 11, 1848. Since the ether cases do not overlap the chloroform cases, the tabulation of the whole series in chronological order is simple.

The operations referred to in this article are set out in Tables I and II in chronological order, with details.

Acknowledgements.

I am indebted to Mr. W. H. Ifould, librarian of the Public Library of New South Wales, Sydney, for exact dates and full particulars of Dr. Machattie's operations, and for authorizing and arranging other searches; to Miss Wayn, of the Historical Records Section, Chief Secretary's Department, Hobart, for checking my notes of Dr. McDonald's operation, and for supplying other items; to Mr. H. R. Purnell, librarian of the Public Library, Adelaide, for confirming one Adelaide case and sending details of it and of others, and for arranging a search of many newspapers, which revealed two further cases; to Miss E. M. Adams, for carrying out a search in Adelaide; to Mr. W. H. Brown, librarian of the Public Library, Brisbane, for an examination of a Brisbane newspaper of the period concerned, and for reporting a Melbourne case previously missed; to Dr. J. S. Battye, principal librarian of the Perth Public Library, for a search of Western Australian newspapers and of the records of the Colonial Secretary's Office for the three years from 1847 to 1849; to Mr. F. I. Bray, in charge of the State Archives, Perth, Mr. V. L. Dean, associate member of the State Archives Board, Perth, and Dr. A. H. Marks, Brisbane, for communications referred to elsewhere; to Miss Ida E. Leeson, Mitchell Librarian of the Public Library of New South Wales, Sydney, for a wide search of old newspaper files, documents and records held in Sydney relating to Moreton Bay, for full reports thereon and transcripts, and for information in the matter of Buchanan's operation, and for bringing under notice Dr. Dunlop's article; and to Mr. J. F. Holloway, general superintendent, and

TABLE I.

Details of Twenty-one Operations under Ether, from Fifteen Reports.

Sequence.		Date of Operation.	Place.	Surgeon.	Nature of Operation.	Quality of Anæsthesia.	Anæsthetist.	Date of Publication.	Newspaper.
Position of Report.	Position of Operation.								
1	1	June 7, 1847.	St. John's Hospital, Launceston, Van Diemen's Land.	Pugh, assisted by Benson.	(i) Tumour of jaw.	Very fair.	Pugh.	June 9, 1847.	*The Launceston Examiner.*
	2	June 7, 1847.			(ii) Cataract.	Good.	Pugh.		
2	3	June 17, 1847.	Her Majesty's General Hospital, Hobart Town.	Agnew.	Not specified, except as "normally most painful".	Good.	—	June 19, 1847.	*The Courier*, Hobart Town.
3	4	Probably a few days after June 21, 1847.	The Australian Agricultural Company's Hospital, Port Stephens, New South Wales.	Buchanan, assisted by Douglas.	Popliteal aneurysm (left).	Very good.	Buchanan.	July 6, 1847.	*The Sydney Morning Herald.*
4	5	Few days earlier than June 28, 1847.	Sydney Infirmary.	McEwan.	Amputation through left thigh.	Fair.	McCrae.	June 28, 1847.	*The Sydney Morning Herald.*
5	6	August 2, 1847.	Melbourne.	Thomas.	Amputation through forearm.	Good.	Thomas.	August 4, 1847.	*The Port Phillip Gazette.*
6	7	August 26, 1847.	Melbourne.	Greeves.	Amputation of finger.	Good.	Thomas.	August 28, 1847.	*The Port Phillip Patriot.*
	8	August 26, 1847.	Melbourne.	Greeves.	Amputation of finger.				
7	9	Between August 26, 1847, and September 7, 1847.	Melbourne.	Thomas.	Removal of three encysted tumours of head.	Good.	Thomas.	Not published.	(From manuscript record.)
	10		Melbourne.	Hobson.	Amputation of toe.				
8	11	September 30, 1847.	Adelaide.	Bayer.	Removal of cancerous growth from breast.	Good.	Kent.	October 2, 1847.	*The South Australian Register.*
9	12	"Shortly after" September 30, 1847.	Adelaide.	Mayo.	Excision of large tumour of breast.	Very good.	—	October 22, 1847.	*The South Australian.*
10	13	October 13, 1847.	Hobart Town.	Bedford.	Amputation through right thigh.	Good.	Casey or Best.[1]	October 20, 1847.	*The Courier*, Hobart Town.
11	14	November 11, 1847.	Her Majesty's General Hospital, Hobart Town.	Seccombe and McDonald.	Amputation through thigh.	Good.	—	November 17, 1847.	*The Courier*, Hobart Town.
12	15	November 22, 1847.	At surgeon's "own house", Melbourne.	Hobson.	Amputation through thigh.	Good.	Campbell.	January 8, 1848.	*The Moreton Bay Courier.* (From a Melbourne paper.)
13	16	February 8, 1848 (*circa*).	Adelaide.	Nash (Colonial Surgeon).	Amputation through thigh.	Not stated.	Bull.	February 12, 1848.	*The South Australian Register.*
14	17	(i) February 11, 1848.	Sydney.	—	Removal of breast.	Good.	—	March 3, 1848.	*The Sydney Morning Herald.*
	18	(ii) February 14, 1848 (*circa*).	Sydney Infirmary.		Excision of portion of jaw.				
	19	(iii) February 16, 1848 (*circa*).	Sydney Infirmary.		Amputation of left hand.				
	20	(iv) February 21, 1848 (say).	Sydney (presumably).		Lithotomy.				
15	21	April 3 1848.	Melbourne.	Thomas.	Amputation of right hand.	Good.	—	April 5 1848.	*The Port Phillip Gazette.*

[1] Probably.

[1] Probably.

TABLE II.

Details of Twenty-four Operations under Chloroform from Twenty-one Reports

Sequence.		Date of Operation.	Place.	Surgeon.	Nature of Operation.	Quality of Anæsthesia.	Anæsthetist.	Date of Publication.	Newspaper.
Position of Report.	Position of Operation.								
1	1	April 11, 1848.	Sydney Infirmary.	McEwan.	Not specified except as "normally very painful and tedious".	Very good.	Nathan.	April 12, 1848.	*The Sydney Morning Herald.*
2	2 3	April 26, 1848. April 26, 1848.	Benevolent Asylum Sydney.	a'Beckett.	(i) Amputation below knee. (ii) Lithotomy.	Very good.	Norrie (chemist).	April 27, 1848.	*The Sydney Morning Herald.*
3	4	May 13, 1848.	Melbourne.	Greeves.	"Dangerous tumour."	Good.	Wilmot.[1]	May 15, 1848.	*The Port Phillip Patriot.*
4	5	May 14, 1848.	Carcoar, New South Wales.	Machattie.	Amputation above knee.	Good.	Machattie.	May 20, 1848.	*Bathurst Advocate.*
5	6	May 19, 1848.	Her Majesty's General Hospital, Hobart Town.	McDonald.	Scirrhous tumour of breast.	Good.	Richardson.	May 20, 1848.	*The Courier*, Hobart Town.
6	7	May 20, 1848.	Her Majesty's General Hospital, Hobart Town.	Agnew.	Cataract.	Good.	Baylie.	May 24, 1848.	*The Courier*, Hobart Town.
7	8 9	May 25, 1848.	Melbourne.	O'Mullane.	(i) Amputation of finger. (ii) Cancerous tumour.	Good.	O'Mullane.[1]	May 31, 1848.	*Port Phillip Patriot.*
8	10	May 27, 1848.	Melbourne.	Greeves.	Plastic on eyelids.	Good.	Wilkie.	May 30, 1848.	*Port Phillip Patriot.*
9	11 12	June 1, 1848. June 1, 1848.	Geelong.	Lincoln (of Melbourne).	(i) Circumcision. (ii) Circumcision.	Good.	Shaw.	June 5, 1848.	*Corio Chronicle.*
10	13	June 14, 1848.	Her Majesty's General Hospital, Hobart Town.	Agnew.	Amputation below knee.	Good.	Baylie (?)	June 17, 1848.	*The Courier*, Hobart Town.
11	14	June 17, 1848.	King's Plains, New South Wales.	Machattie.	Amputation through thigh.	Good.	Machattie.	June 24, 1848.	*Bathurst Advocate.*
12	15	June 20, 1848.	Windsor, New South Wales.	Dowe.	Ligature of radial artery.	Good.	White.[1]	June 24, 1848.	*The Sydney Morning Herald.*
13	16	July 10, 1848.	Hobart Town.	Crowther.	Lithotomy.	Very fair.	——	July 12, 1848.	*The Courier*, Hobart Town.
14	17	July 12, 1848.	St. John's Hospital, Launceston.	——	Amputation of leg.	——	——	July 15, 1848.	*The Courier*, Hobart Town.
15	18	July 19, 1848.	Windsor Hospital, Windsor, New South Wales.	Dowe.	Ligature of common carotid.	Caused death of patient.	White.	July 22, 1848.	*The Sydney Morning Herald.*
16	19	August 23, 1848.	Melbourne Hospital.	Thomas.	Amputation of leg (probably below knee).	Good.	O'Mullane.	August 25, 1848.	*The Melbourne Argus.*
17	20	September 5, 1848 (*circa*).	Colonial Hospital, Launceston.	Casey (Colonial Surgeon).	Amputation.	Good.	——	October 4, 1848.	*The Launceston Examiner.*
18	21	September 28, 1848.	Colonial Hospital, Launceston.	Casey (Colonial Surgeon).	Tracheotomy.	Caused death of patient.	Motherwell.	October 4, 1848.	*The Launceston Examiner.*
19	22	October 29, 1848.	Melbourne.	——	Excision of tumour of chest.	Good.	——	November 1, 1848.	*Port Phillip Patriot.*
20	23	January 20, 1849.	Singleton, New South Wales.	Stolworthy.	Amputation below knee.	Very fair.	Glennie (?)	January 26, 1849.	*The Sydney Morning Herald.*
21	24	February 4, 1849 (*circa*).	Melbourne.	Thomas.	Removal of "huge tumour" of shoulder.	——	——	February 14, 1849.	*The Launceston Examiner.*

[1] Probably.

Mr. W. J. Rees, secretary of the Australian Agricultural Company, for an extensive search of the company's records, and for particulars regarding Port Stephens. I should like to thank them all very much for their trouble and courtesy.

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Reports of Cases.

ASTHMA COMPLICATED BY SPONTANEOUS PNEUMOTHORAX.[1]

By COTTER HARVEY, M.B., Ch.M., T.D.D.,
Sydney.

THE days are past when it was taught that spontaneous pneumothorax was nearly always due to pulmonary tuberculosis. It is now recognized that the majority of cases occur in the apparently healthy and that no pulmonary disease follows this misadventure. The exact cause of "*pneumothorax simplex*", as R. A. Young has aptly termed it, is still under discussion. Rupture of an emphysematous bulla, of a subpleural tuberculous scar, or of a congenital cyst has been cited. I agree with James Maxwell that the rupture of a subpleural cyst is the usual cause. Certain it is that pneumothorax rarely occurs in the patient suffering from chronic bronchitis and emphysema, though it might be expected to be a common occurrence. It is also rare in asthmatics, and escapes mention in most works on respiratory disease. With deference I suggest that it is also uncommon in pulmonary tuberculosis.

The following two reports are of patients who have come under my care within the past fifteen months; each presents some features of interest.

Case I.

J.C.P., aged nineteen years, a wireless assembler, has suffered from asthma all his life, the attacks being usually nocturnal. Apart from this he is well. There is no family history of tuberculosis. He was seen on June 21, 1938, with a history that three months previously, while having an "ordinary turn of asthma", he seemed to be worse than usual and had pain in his left side. This pain lasted on and off for two weeks. As his shortness of breath was constant and he was unable to return to work, he consulted his family physician, who found that he had a spontaneous pneumothorax. This was confirmed by X ray examination, the report on which is as follows:

> There is a pneumothorax on the left side, with a small collection of fluid in the base. The left lung is about quarter collapsed, and the heart and mediastinum are displaced over to the right. There is no gross lesion in the collapsed lung. The right lung appears clear.

He remained in bed for one month, with symptoms steadily diminishing, and then had one month's holiday in the country. On return it was found that his lung had completely reexpanded and he resumed work. He saw me three weeks later. He was still at work, feeling breathless at times, and stated that a few days previously he had noticed a "clacking sound" in his left side.

On examination it was found that he had a second spontaneous pneumothorax, the lung, on examination with a fluorescent screen, being observed to be in the same position as when the former skiagram was taken. Ten days later it had practically reexpanded, and two weeks after this, the patient resting at home meanwhile, the lung had completely expanded and he resumed work. He has been well since and is steadily gaining in weight.

This would seem to be a case of pneumothorax occurring in an asthmatic without any pulmonary tuberculosis. Admittedly, prolonged observation is necessary before a final diagnosis can be made. It is my practice in the treatment of a patient who has sustained two pneumothoraces in a short space of time to maintain an artificial pneumothorax for at least six months. I consider this gives the pleural tear the best chance of healing, and it increases the likelihood of an adherent pleura when the lung finally expands. From experience of artificial pneumothorax treatment in asthmatics I should not consider this treatment, in such a case, as an asthmatic attack is a most distressing experience to a patient who has only one lung with which to breathe.

Case II.

Miss J.G., aged twenty-five years, was first seen in July, 1937. She had been subject to attacks of asthma at irregular intervals for three years. In May, 1937, a severe attack commenced, and as she had not improved after three weeks at home she was transferred to hospital. Shortly after her admission to hospital dyspnœa became extreme and it was thought that spontaneous pneumothorax occurred at this time. She was transferred to the Royal North Shore Hospital of Sydney on July 28, 1938, under the care of Dr. Bernard Riley, with whom I saw her in consultation. She was orthopnœic, cyanosed and in extreme distress, being practically unable to speak or to swallow. X ray examination at this time confirmed the physical signs, showing the condition to be a valvular pneumothorax of the right side with great mediastinal displacement. Air was removed by a reversal of the process of inducing pneumothorax. The initial pressure was +4, +11 centimetres of water, and 900 cubic centimetres of air were removed, leaving a final pressure of −7, +2. Very little relief from symptoms was noted; nor did X ray examination show any appreciable change. Large amounts of air were removed every second day, but the pressures became rapidly positive again. On August 20 the readings were −6, +6 centimetres of water; on the removal of 1,100 cubic centimetres of air the pressure fell to −12, −8. On this occasion an intrapleural injection of 40 cubic centimetres of 50% glucose solution was given without any reaction. Further quantities of air were taken off at regular intervals. On September 1 it was found that the base of the lung was adherent, but the remainder was still collapsed, and intrapleural pressures were still positive. On September 10 a Southey's tube was inserted into the pneumothorax and the other end placed under water. This was maintained for several days; but no further expansion of the lung resulted.

On September 18, after the removal of 1,500 cubic centimetres of air, a further intrapleural injection of 40 cubic centimetres of 50% glucose solution was given; this was followed by severe pain in the chest and a febrile reaction. When a reading was next taken, on September 20, the pressure was negative.

X ray examination on September 22 showed that the lung was now practically expanded and that there had

[1] The patient described in this report was shown at a meeting of the Section of Medicine of the New South Wales Branch of the British Medical Association on September 13, 1938.

been a considerable pleural reaction. The lung subsequently expanded completely and has remained so to the present time. The patient has continued to have recurrent attacks of asthma.

The main point of interest in this case is the treatment adopted to secure the obliteration of the spontaneous pneumothorax. In view of the fact that the valvular pneumothorax had persisted for at least three months it seemed unlikely that the lung would have expanded spontaneously unless some form of plastic pleurisy had supervened. For this purpose the intrapleural injection of glucose is a recognized procedure.

A CASE OF ACUTE MASTOIDITIS WITH EMPYEMA OF AN APICAL PETROSAL CELL DRAINED BY A SUBTEMPORAL OPERATION.

By A. E. COATES and ERIC GUTTERIDGE,
Melbourne.

A MALE, aged forty-four years, developed an acute mastoiditis in a highly cellular temporal bone. A week later the zygomatic cells became involved and an abscess formed in the temporal fossa. The ear and post-aural wound discharged profusely for six weeks. The bacterial flora were the *Streptococcus hæmolyticus* and *Staphylococcus aureus*. There was persistent severe pain over the maxilla, localizing in the last two molar teeth. There was an occasional spread to the temple and above the eye. The auricle and the lips of the post-aural wound were hypersensitive. The temperature and pulse remained normal throughout. The tongue was clean and the patient felt well except for the pain. A skiagram showed considerable excavation of the petrous part of the temporal bone, with a suggestion of sequestra in the posterior cell.

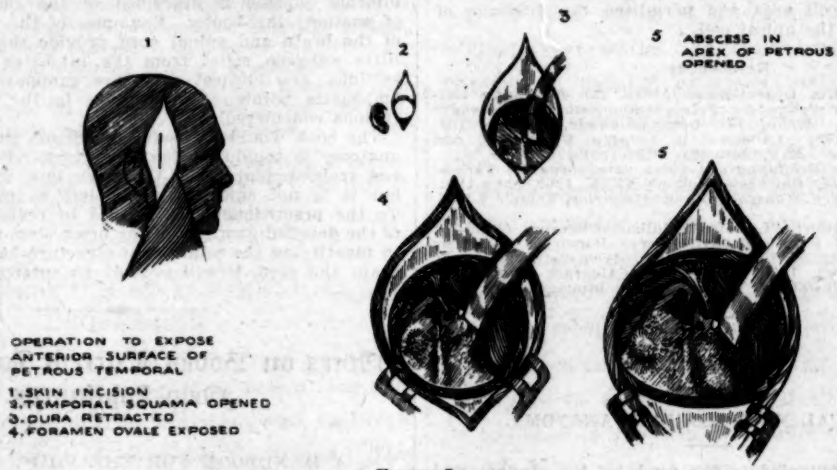

FIGURE I.

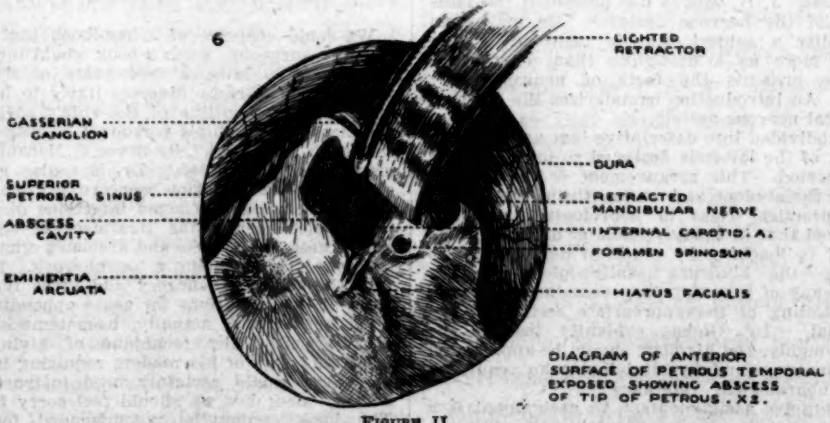

FIGURE II.

These symptoms of pain and profuse discharge from the ear and mastoid wound continued for five weeks, when the pain diminished and the discharge lessened.

Six weeks after the mastoidectomy there was a sudden onset of severe pain in the upper jaw and aural region, with the signs of a cerebral involvement, namely, vomiting, neck stiffness and a high temperature. At operation no cell tract leading to the petrosal cells could be found. Lumbar puncture produced a limpid fluid at normal pressure and containing pus and red blood cells, but no organisms.

The symptoms of pain in the area supplied by the maxillary division of the trigeminal nerve suggested that the petrosal tip cell involved was on the anterior surface of the petrous part of the temporal bone or had involved the periosteum on that aspect. A posterior spread would have probably affected the sixth nerve (abducens), causing paralysis of the external rectus muscle (Gradenigo's sign), or have produced the dramatic agonizing pain of involvement of the recurrent ophthalmic nerve.

Following the suggestions of Streit,[1] Voss[2] and Eagleton,[3] we decided to approach the antero-superior surface of the petrous part of the temporal bone by a modification of the operation upon the Gasserian ganglion.

Under intratracheal anæsthesia a vertical incision, four inches long, was made in the temporal fossa, one inch in front of the ear, extending over the zygomatic arch. The temporal fascia was split and the temporal muscle retracted. The temporal squama was trephined, a window, two inches in diameter, being made, well downwards as far as the temporal fossa. The dura over the inferior surface of the temporal lobe was then elevated carefully with pledgets of cotton wool. The dura stripped easily, especially over the petrous portion of the bone, and when the depth of the *foramen spinosum* was reached a shaggy appearance of the dura was noted. The middle meningeal artery was coagulated with a diathermy electrode and divided. The *foramen ovale* was exposed and the dura beneath the mandibular division of the fifth nerve and the Gasserian ganglion was elevated. The *hiatus facialis* was observed. The anterior surface of the pyramid was seen to be pale yellow in colour. The horizontal portion of the internal carotid artery was seen lying in the petrous bone.

A chisel was gently applied to the area of petrous bone posterior and medial to the internal carotid artery, and after some fragments of bone had been removed a cavity was exposed and thick creamy pus welled up into the wound. The bone opening was enlarged, and by suction and curettage the cavity was revealed, with the carotid

artery in the anterior wall, as shown in the diagrams. The whole of the anterior surface of the petrous part of the temporal bone was then examined. The superior petrosal sinus was elevated from its attachment to the superior angle of the pyramid, and the abscess cavity on the lateral and posterior portions of the petrous bone was made continuous with the subdural space in front. A drain of corrugated rubber was placed down to the petrous apex. During the course of the operation hæmorrhage occurred from a vein near the *foramen ovale*, probably communicating with the cavernous sinus; but it was easily arrested by pressure of a cotton-wool pledget. The illuminating retractor of the Adson type provided excellent illumination. The ease with which the dura stripped from the petrous portion of the temporal bone was noted. The operation was thus a modified Adson's approach to the Gasserian ganglion and its sensory root.

Eight days later the patient died, the cause of death being basal meningitis and temporo-sphenoidal abscess.

Comment.

The notable points in this case are the highly cellular temporal bone, the localization of the pain to the right maxilla, the otherwise good condition of the patient and the prolonged period—fifty days—before cerebral symptoms appeared. The subtemporal approach gave a good exposure of the petrosal cell area and permitted the drainage of the empyema of the apical cell.

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Reviews.

PRACTICAL NEUROLOGICAL ANATOMY.

IN a volume "adapted to the needs of the student and practising physician" J. H. Globus has presented the facts of the anatomy of the nervous system.[1] He makes no attempt to simplify a subject that is regarded by the average student more as a discipline than a practical exercise; but he presents the facts of neurohistology lucidly and well. An introduction summarizes the development of the central nervous system.

The work is subdivided into descriptive text and "assignments", and each of the latter is designed to provide work for a two-hour period. This arrangement is useful from the standpoint of the student, and renders the book specially useful for the practical class in neurological anatomy. It is to be deplored that in many schools of anatomy little attention is paid to teaching by practical demonstrations in this subject; the student usually picks up his knowledge by means of a perfunctory examination of the brain and the reading of the appropriate section of the dissecting manual. Dr. Globus evidently teaches the subject very thoroughly, and his book should be appreciated by teachers of anatomy and by clinicians who require a companion for neurological reference.

There are twenty-five assignments. An assignment is a series of questions or an exercise requiring the filling-in of details in diagrams supplied at the back of the book, or the identification of structures in cross-sections indicated in the text. There are ninety-two figures (photomicrographs and drawings of portions of the central nervous system) and fifty-five outline drawings which are to be completed by the student. The latter are detachable and may be pasted in an exercise or laboratory book. A very useful chapter on the preparation of nervous tissue for examination provides the laboratory worker with the modern technique of staining and sectioning.

The chapters on the autonomic system and on functional localization in the cerebral cortex are sketchily done. It is regrettable that more detail is not available in this section of the work. A chapter on the origin and termination of some of the better known afferent and efferent pathways provides an excellent review in the latter half of the book. The cellular elements of the nervous system are beautifully illustrated, and here a groundwork is laid down for the later study of neuropathology. The matter is quite up to date and includes the valuable contributions made in recent years by the American neurohistologists and clinicians. The histological architecture of the cortex is presented in too elementary a form, and this section does not do justice to such an important part of neurohistology. Nor is the vascular supply of the brain discussed in the detail required by the modern clinician. The arterial supply of the basal ganglia and internal capsule is described in the customary manner of anatomy text-books. Examples of the applied anatomy of the brain and spinal cord provide the student with a little welcome relief from the intensive study of cross-sections, and clinical cases are summarized in order to emphasize points of importance in the anatomy of the regions considered.

The book would be useful in schools where neurological anatomy is taught in the laboratory. For the specialist and trained neurologist the work is a useful companion, but it is not sufficiently complete to meet their needs. To the practitioner who wishes to revise his knowledge of the detailed anatomy of the brain stem and who delights in identifying the minutiæ of structure at all levels of the brain and cord, it will provide an entertaining guide.

[1] "Practical Neuroanatomy: A Text-Book and Guide for the Study of the Form and Structure of the Nervous System", by J. H. Globus, B.S., M.D.; 1937. London: Baillière, Tindall and Cox. Imperial 8vo, pp. 409, with illustrations. Price: 27s. net.

Notes on Books, Current Journals and New Appliances.

A HANDBOOK FOR THE SHIP'S SURGEON.

WE could conceive of a handbook that would be useful to ship's surgeons. Such a book would include a discussion of quarantine laws, a description of the symptoms and treatment of various illnesses likely to be encountered on board ship, an outline of the ship's surgeon's duties and his place in the ship's personnel *et cetera*. In "The Ship Surgeon's Handbook", by Bryce J. Macaulay, these requirements are not fulfilled.[1] Dr. Macaulay gives some useful elementary information concerning quarantine and the incubation periods of some infectious diseases. If he had then added merely the treatment of such conditions as seasickness, heat-stroke and fireman's cramp, he might have succeeded in producing a useful work. But he goes forth into the realm of surgery and gives inadequate descriptions of the operations for acute appendicitis and strangulated hernia and, actually, hæmatemesis. Dr. Macaulay also describes the technique of giving a hypodermic injection. Any of his readers requiring instruction in this procedure would certainly need instruction in operative surgery also; but we should feel sorry for their patients. The book cannot be recommended for use by ship's surgeons. Actually, if the information it contains was accepted as authoritative, it might be dangerous.

[1] "The Ship Surgeon's Handbook", by B. J. Macaulay, M.D., L.R.C.P., L.R.C.S.; 1938. Bristol: John Wright and Sons Limited; London: Simpkin Marshall Limited. Foolscap 8vo, pp. 66. Price: 3s. 6d. net.

The Medical Journal of Australia

SATURDAY, DECEMBER 3, 1938.

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PUBLIC ESTEEM OF THE MEDICAL PROFESSION.

THE art and practice of medicine have a long and venerable history, and from a distant past medicine has inherited many of its finest traditions. The Hippocratic oath exacts from practitioners moral integrity and uprightness of character, and establishes the highest principles of ethics and conduct as the basic relation between doctor and patient and between doctor and colleague. Medicine is the only universal profession, following everywhere the same methods in order to reach the same objective, and knowing no national boundaries. Regarded always as one of the liberal professions, it demands a sound general education as a preliminary to the specialized study of academic training.

Though certain members of the profession have been recreant to their trust and in consequence have brought discredit upon themselves, the great majority have upheld the ideals of their calling and have bequeathed to their successors the means for future progress resulting from their efforts. No other profession can show such a number of members who, by self-sacrifice and unremitting toil, have contributed so much to human welfare. What else would have justified the well-known encomium of the medical practitioner by Robert Louis Stevenson?

> He is the flower of our civilisation, and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period and most notably exhibited the virtues of the race.
>
> Generosity he has such as is possible to those who practise an art, never to those who drive a trade; discretion tested by a hundred secrets; tact, tried in a thousand embarrassments; and, what is more important, Herculean cheerfulness and courage.

If this estimate is justified, how are we to account for the fact, which is becoming more and more evident, that whilst the individual medical practitioner is usually esteemed and respected, the profession collectively is regarded with suspicion and distrust? There are many factors contributing to the changed and changing attitude of the public to the profession. Some of these are beyond the practitioner's control; others demand his serious consideration. H. G. Wells points out that man is naturally rebellious against his medical adviser. He is born recalcitrant and protesting. This spirit of revolt can be readily controlled when the medical practitioner is the trusted confidant and intimate friend of the patient. Such a relationship exists with the fast disappearing type of family physician. With the progress of knowledge, however, medicine is becoming less of an art and more of a science, and with that change much of value in personal relationships is being lost.

The practitioner perhaps shows too great a tendency to be cool, detached and scientific, viewing the patient not as a personality, but merely as the vehicle of an interesting clinical problem. Scientific detachment is invaluable, in fact essential, in its right sphere; but we must be careful not to give the impression that the patient's problem can be solved merely by the application of an infinite variety of scientific tests. The public is apt to infer that lack of immediate success is the fault of the practitioner,

and becomes intolerant of what it considers is lack of knowledge, error of judgement or imperfection of skill. Human shortcomings may be forgiven in others, but never in a doctor who has lost the human touch. This attitude of the patient, regrettable though it may be, urges the practitioner to adopt the role of universal specialist, whose reputation may be injured if the patient be referred to a colleague skilled in some special field. Far too frequently delay in obtaining further expert opinion drives the patient into the hands of the charlatan and makes him an avowed opponent of the whole medical profession.

It is a paradox of human nature that the lay public, whilst recognizing the fact that a doctor must live by his calling, resents the unfortunate necessity to pay him for services rendered. One is reminded of the famous Golzius cartoon, which portrays the doctor as an angel when called to the bedside, as a god when a cure has been effected, and as a devil when presenting his bill. Yet no other profession renders so much gratuitous service to the community.

The most outstanding cause of public antagonism is the collective organization of the profession. Organization of medical men is essential for their own and the public's welfare; but such organization is seriously resented because of suspicion that public interests are thereby subordinated to professional advantage. The public insists that the doctor should retain his personality at all costs. Anything that tends to make his relations with his patient impersonal is rightly held to be detrimental. It is precisely this aspect of organization that is resented. The great growth of hospital out-patient departments, in which the person is subordinated to the necessities of administration, and the advent of preventive State medicine, whereby the whole population is dealt with *en masse*, have undoubtedly convinced the public of its impersonal relationship with the medical profession. How to utilize increasing medical knowledge without sacrificing personal contact with the public is a problem demanding the serious thought of all practitioners.

Current Comment.

INTRACRANIAL HÆMORRHAGE IN THE NEW-BORN.

VON REUSS has stated that trauma to the child during birth may be inevitable even under the most favourable conditions of delivery. Intracranial lesions are the most serious form of injury to which a newly born child is subject, and these are the most frequent findings *post mortem*. According to W. S. Craig intracranial injuries were present in 130 of 290 consecutive autopsies on newly born infants.[1] Hæmorrhage almost invariably accompanied the intracranial injury, but occasionally small dural tears, not associated with bleeding, were found. Craig describes a group of 126 infants in whom intracranial hæmorrhage was found *post mortem*. Subdural hæmorrhage was present in 62, subarachnoid hæmorrhage in 36, intraventricular hæmorrhage in 22, and hæmorrhage into the brain substance in six. Subdural hæmorrhage was generally associated with tearing of the tentorium and with maturity and instrumental delivery; subarachnoid and intraventricular hæmorrhage with prematurity and with illness of the mother during pregnancy. The rarest form, hæmorrhage into the brain substance, occurred when labour was prolonged and especially when a very young or an elderly mother was delivered of a large first-born child. In only four cases of intracranial bleeding was a hæmorrhagic diathesis detected in the parents of the child.

Craig supplies exact descriptions of the position and extent of the hæmorrhage in all cases, together with careful histological studies of hæmorrhage into the cerebral substance. The special value of his work, however, lies in the fact that his study is based upon both clinical and pathological observations. The clinical condition of the infants from the time of birth was carefully observed and recorded, and an attempt was made to correlate symptoms with autopsy findings, in the hope that the knowledge so acquired might help in diagnosis and in treatment also. For Craig is no defeatist. He holds no brief for the view that recovery of the child is not always desirable. He has made later observations of a large number of children who have recovered, and is convinced that the severity of symptoms during the early days of life is not a reliable indication of the possibility of subsequent physical or mental impairment. Gross intracranial injury, which is sometimes unavoidable, especially when there has been inadequate antenatal care, may result in a stillbirth; but Craig takes a vigorous and optimistic stand on behalf of the newly born child, however badly injured, who has managed to survive for a few hours. Every newly born infant who shows signs of cerebral hæmorrhage or is likely to have sustained a cerebral injury should receive skilled nursing comparable with that ordinarily available

[1] *Archives of Disease in Childhood*, June, 1938.

to an adult suffering from pneumonia or typhoid fever, or, we might add, from a head injury. For the deaths of a number of infants who manifest symptoms of cerebral hæmorrhage are attributable to the development of complications and might be prevented by skilled nursing. The most important of all forms of treatment, of course, is prophylaxis; the prevention of the occurrence of cerebral hæmorrhage belongs to the domain of obstetrics and is outside the scope of Craig's paper.

In his discussion on the diagnosis of head injury Craig emphasizes the importance of such symptoms as anxiety of the infant's expression, great restlessness of mind rather than of body, and "sponginess" of the anterior fontanelle. He believes that though it is not always present, "adder-like" protrusion of the baby's tongue occurs only in cases of intracranial hæmorrhage. Other signs observed were twitching of the extremities, nystagmus, vomiting, disinclination of the child to drink fluids, diminished output of urine, and deep cyanosis. The last-named sign usually indicated the presence of accompanying pulmonary lesions. It was impossible, while the infant was alive, to distinguish pneumonia from intrapulmonary hæmorrhage. Clear-cut clinical pictures appear to mark different types of intracranial hæmorrhage. "Attention is drawn", says Craig in an admirable summary, "to the indefiniteness and frequent absence of clinical signs in cases of subarachnoid hæmorrhage; to the successive periods of improvement, irritation and depression in cases of subdural hæmorrhage; to the sudden onset, violent symptoms, short course and terminal hyperpyrexia in cases of intraventricular hæmorrhage; and to the prolonged course, the uninterrupted, progressive fall in weight, the association of mental restlessness with extreme physical weakness, the low body temperature and the insidious decline characteristic of infants with hæmorrhage into the brain substance." These opinions are based on the patient, accurate and laborious investigation of deaths of the newly born. Only by the provision of facilities for such investigations can we hope to reduce the neonatal death rate.

ACUTE ULCERATIVE STOMATITIS.

A LABORATORY for dental research has been established at Saint Mary's Hospital, London. From it comes a communication by Wilfred Fish upon a new form of treatment for acute ulcerative stomatitis.[1] By ulcerative stomatitis the author means an acute, often recurrent marginal gingivitis, which sometimes spreads to tongue, cheek and palate. The clinical symptoms are soreness of the gums and great discomfort on eating. Brushing the teeth is abandoned by the patient because of the pain and bleeding that result. The body temperature is raised. The teeth are covered with débris and the gums are red, friable and swollen. If unhealed, the gum edges and interdental papillæ may necrose. A differential diagnosis must be made from scurvy, leuchæmia and mercurial stomatitis. Young men are especially affected by this disease, which, however, is not very readily transmissible. The fusiform organisms and spirochætes of Vincent's angina are usually recoverable, although Fish states that some uncertainty exists as to whether these represent the causal organism. He believes, however, that the responsible agent is actually limited to the necrotic tissues and does not extend deeply. On this account local therapy is a distinct success. Tooth extraction during the acute phase is definitely contraindicated. The organisms would appear to be highly fibrolytic and to exert a "negative chemiotaxis" upon leucocytes.

A plan of treatment that keeps an efficient antiseptic in contact with the inflamed areas for several days would appear, for the reasons given above, to hold a good chance of success. Fish, therefore, attempted to protect the affected tissues by the use of a paste containing zinc oxide and oil of cloves. Wisps of cotton wool, saturated with the mixture, were gently tucked into the interdental spaces and into the gaps between the gum margins and the exposed teeth. The mixture rapidly sets into a cement casing. Pain and distress, according to Fish, cease within a few hours, and normal feeding can then be resumed. The dressing is removed in forty-eight hours, when all signs of inflammation and sloughing have usually disappeared. The dressing is then repeated and left in position for a further few days.

To prevent an early return of the trouble and to increase the resistance of the gum margin, keratinization is encouraged by the use of a badger-hair tooth-brush and the application of gentle friction between the teeth with wooden tooth-picks. A soft-bristle brush is used a fortnight later. Should it be found advisable to extract any tooth shortly after an attack of acute gingivitis, the precaution of prophylactic packing and of scaling the paraodontal sulcus with the actual cautery should be taken as a preliminary to the extraction. Otherwise bone necrosis or other serious septic complications may ensue. If these precautions are taken, there is no objection to the use of local anæsthesia, since Fish has proved that the deep tissues are sterile.

Fish emphasizes the advantage of his method in the treatment of patients suffering from endocarditis who require extraction of teeth on account of oral sepsis. While it is probably incapable of preventing the entry of showers of bacteria into the blood stream from apical abscesses, the treatment is of value when pyorrhœa exists in these susceptible patients. There is a danger, which cannot be overemphasized, namely, that of initiating subacute bacterial endocarditis in a person with congenital or rheumatic heart disease by the wholesale extraction of septic teeth. If Fish's treatment can lessen this risk, he will have made a good contribution to medical practice.

[1] *The Lancet*, September 3, 1938.

Abstracts from Current Medical Literature.

MORBID ANATOMY.

Histology of Bone Marrow.

C. P. RHOADS AND D. K. MILLER (*Archives of Pathology*, September, 1938) present the results of the histological study of the sternal bone marrow of 69 patients with aplastic anæmia. They have divided these into five groups. In three of these groups similar histological changes are found; they differ from each other principally in the degree of cellularity observed. In all three the basic defect is an absence of mature forms of hæmopoietic cells, a change that may be associated with a decrease in cell numbers, an apparently normal cellularity or a very great increase in cellularity. The fourth group is somewhat different, in that although a defect in maturation is present, the major change is a replacement of hæmopoietic marrow by a cellular structure made up of megakaryocytes and their precursors—a true "myelophthisic" anæmia. In the fifth group the marrow is sclerotic and is characterized by an elongation and matting together of the marrow and cells. Comparison of preparations of marrow from persons suffering from aplastic anæmia with preparations of marrow from persons suffering from acute granulopenia shows in the latter a similar lack of maturation of hæmopoietic cells at an early undifferentiated stage, and suggests that the two disorders may have some ætiological factor in common.

Subdural Hæmatoma.

A. B. BAKER (*Archives of Pathology*, August, 1938) presents a review of the literature dealing with subdural hæmatoma and a detailed study of the clinical material at his disposal in an attempt to elucidate the ætiology and pathogenesis of this lesion. From this study he has evolved an ætiological classification of subdural hæmatoma. It includes two main groups: (i) hæmatomata of hæmorrhagic origin, in which the new membrane is formed on organization of the hæmatoma, and (ii) those of exudative origin, in which the new membrane is formed on organization of the inflammatory dural exudate, bleeding occurring secondarily from the newly formed vessels. In the hæmorrhagic group are included traumatic hæmorrhage, which is by no means the most common cause, and spontaneous hæmorrhage due to such causes as scurvy, purpura, leuchæmia, acute infectious diseases (whooping cough *et cetera*), syphilis, tuberculosis (with vessel involvement) and atherosclerosis. The exudative group is less definite. In this the lesion apparently supervenes on pachymeningitis, of undetermined cause, or due to acute infectious disease, or to syphilis, or occurring as a result of alcoholism and scurvy. It is to this group that Virchow's term *pachymeningitis hæmorrhagica interna* is applicable. The symptoms are protean. Most frequently, however, there is slow development of evidence of intracranial irritation. Headache, vomiting, drowsiness associated with mild or severe focal symptoms and a change in the patient's mental constitution may be the first signs, though occasionally the first intimation of the lesion may be a sudden loss of consciousness. The hæmatomata may vary in size from ecchymotic formations to massive clots that displace a large part of one cerebral hemisphere. The enclosing membrane varies from a fine, delicate, transparent layer to a fairly tough, opaque, gelatinous or fibrous structure. Its dural surface is rough and coarse, whilst its arachnoid surface is smooth and shiny. In order to understand the pathogenesis of subdural hæmatoma it is necessary to realize that the dura consists of the following layers from within outwards: epithelial or mesothelial lining, subepithelial layer of loose connective tissue in which ramifies an inner capillary network, an inner fibrous tissue layer, an outer capillary network and an outer dense fibrous tissue layer. Histological investigation produces overwhelming evidence that subdural hæmatoma, whatever its ætiology, is really an intradural hæmorrhage arising from the inner or from the outer capillary network, most often from the inner. That the limiting membrane is portion of the dura itself is substantiated by the fact that it is present on examination a few days after the injury. The author observes that it is most unlikely that invading fibroblasts and capillaries would wander through the entire hæmatoma to form a membrane on its arachnoid surface rather than produce a gradual organization of the entire clot beginning at its dural surface. Although there may be a concomitant rupture of a cerebral vein or sinus, this is not the cause of that form of subdural hæmatoma which has an inner limiting membrane. Boekmann's observations on craniotomy indicate that hæmorrhages into the subdural space, unless large, are completely absorbed.

Cell Variation in Malignant Tumours.

O. SAPHIR (*The American Journal of Pathology*, July, 1938) discusses morphological variations in cells of malignant tumours, so extensive as to render them difficult to classify. In a number of carefully studied tumours arising predominantly in the skin or mucous membranes, not a single type of tumour cell, but two or more apparently different types of tumour cells were found. Thus in malignant conditions of the cervix it would seem that squamous-celled carcinoma is one type and the transitional-celled carcinoma another, and that a number of tumours occur having the characteristics of both. Moreover, it is evident that in a number of seemingly simple basal-celled carcinomata epithelial structures are encountered that are undoubtedly squamous in character. The presence of various types of tumour cells in the same tumour may be due to a number of factors; however, it is suggested that these tumours arise not from individual cells or cell groups, but from one area containing the various cells of which the tumour consists, or precursors of these cells. The practical application of these observations is that the relative resistance of some basal-celled or transitional-celled carcinomata to radium may be ascribed to the presence in these tumours of many squamous cells.

Hypertrophy of the Muscle of the Gall-Bladder.

K. B. LAWRENCE AND S. WARREN (*Archives of Pathology*, August, 1938) made measurements of the thickness of the muscularis in a series of 100 gall-bladders removed at operation. In all of them some degree of chronic cholecystitis was present. Fifty normal gall-bladders removed at autopsy were used as controls. It was found, after adequate allowances had been made for apparent variations in muscle thickness, due to the relative size and physiological state of the organ and to *post mortem* shrinkage *et cetera*, that the average thickness of the muscularis of the gall-bladders from patients with cholecystitis was more than twice that of normal gall-bladders. Microscopically the increase appeared to be due to definite hypertrophy of the smooth muscle fibres. This was probably due to increased intrabiliary pressure from mechanical obstructions, such as are caused by stone or by a stricture, and from physiological defects, such as failure of absorption of vesical contents, reflex spasm and the like.

Lymphadenoid Goitre.

D. VAUX (*The Journal of Pathology and Bacteriology*, May, 1938) reports a study of 38 cases of lymphadenoid goitre, which she divides into early, intermediate and later stages, according to the various proportions of glandular acini, lymphadenoid tissue and fibrous tissue. The average ages of the patients in these groups were forty-four, forty-six and forty-eight years; and whereas mild thyreotoxicosis was prevalent in the early stage, hypothyreodism was the rule in the later stages. The author is of the opinion that lymphadenoid goitre should be regarded as an excessive involution of the thyroid gland following mild thyreotoxicosis, and that Hashimoto's *struma lymphomatosa* corresponds to its early form, whilst Riedel's "iron-hard" goitre represents its late fibrotic stage.

MORPHOLOGY.

Agenesis of the Corpus Callosum and its Recognition by Ventriculography.

FIVE cases of agenesis of the *corpus callosum* described by Olan R. Hyndman and Wilder Penfield (*Archives of Neurology and Psychiatry*, Volume XXXVII, 1937) are the first to be recognized during life. The authors state that the ventriculograms, when once seen and understood, could scarcely be mistaken for those showing any other condition. Complete reports of the cases of five living patients are given, together with a description of the ventriculograms. Two presented complete and two partial absence of the commissure; one presented absence of only the splenium of the *corpus callosum*. Analysis of the structures and of the embryological principles involved makes it possible to identify the lines of the ventriculographic shadows and to distinguish complete from incomplete agenesis. The chief characteristics of the ventriculograms in the antero-posterior view are symmetrical separation of the anterior horns, with a moniliform shadow of gas between them, which is continuous with the third ventricle below and rises higher than this ventricle should. Most striking of all is an almost right-angled shelving or bicornuate appearance of the bodies of the lateral ventricles.

Regeneration of Nerves to the Adrenal Gland.

W. H. HOLLINSHEAD AND H. FINKELSTEIN (*Journal of Comparative Neurology*, Volume LXVII, 1937) state that denervation of the adrenal gland, by removal of the lower thoracic and upper lumbar sympathetic chain in the cat, has been followed by regeneration of nerve fibres to the gland. The regenerating fibres arose from lower thoracic and upper lumbar spinal nerves and provided the gland with an apparently normal innervation as early as the fourth month after operation.

Nerve Supply of the Hypophysis.

G. W. HAIR (*The Anatomical Record*, June, 1938) gives an account of the innervation of the hypophysis in a cat. He states that it receives unmyelinated nerve fibres from the carotid plexus. These fibres reach the gland by accompanying its arterial channels. Thus the fibres to the anterior lobe pass to it directly along vessels forming the direct vascular route, or indirectly along vessels that penetrate the *pars tuberalis* before reaching the anterior lobe. The fibres from the carotid plexus to the posterior lobe are few in number and accompany the arteries that enter that part from behind. Since cervical sympathectomy does not entirely destroy these fibres, it is apparent that they do not all arise from the superior cervical ganglion. It is suggested that some of them are derived from the glosso-palatine nerve and are thus parasympathetic in origin. The supraoptico-hypophyseal tract is the principal source of the nerve fibres in the *pars nervosa*. A considerable number of these fibres also penetrate into the *pars intermedia*. A few fibres of the supraoptico-hypophyseal tract penetrate the infundibular stalk and reach the *pars tuberalis*. Occasionally fibres of similar origin can be traced to the anterior lobe. Nerve fibres ramifying in the epithelial parts of the hypophysis, that is, the *pars intermedia*, the *pars distalis* and the *pars tuberalis*, have knob-like enlargements along their course that lie against the epithelial cells of the part. The pericellular network of fibres described by Pines has not been demonstrated in this study. Bulb-like terminations of the fibres of the supraoptico-hypophyseal tract, which have been described in cattle and in man, are also present in the *pars nervosa* of the cat.

Observations of the Graafian Follicles.

D. S. PANKRATZ (*The Anatomical Record*, June, 1938) records some observations on the Graafian follicles in an adult human ovary and presents some information on the growth and degeneration of the follicles. Two vesicular monovular, one large binovular, and an unusual vesicular follicle, which probably represents a type of atresia, are described. It appeared that many follicles had become large and vesicular and then degenerated, since no definite *corpora lutea* were found.

Surface Enamel of Human Teeth.

M. J. EISENBERG (*The Anatomical Record*, June, 1938) gives an account of the surface enamel of human teeth. He states that enamel rod ends are visible over practically the entire surface of the polished human tooth. The most common rod-end shape is more or less hexagonal or a distorted semilunar outline showing evidence of five or six sides. Over the widest diameter of the tooth, and on small cuspal prominences of the palatal surfaces of incisor and canine teeth rods may be exposed and lie lengthwise for small distances. Islands of non-reflective enamel, showing no rod detail, are visible in many instances.

The Vertebral Column.

H. ROCKWELL, F. G. EVANS AND H. C. PHEASANT (*The Journal of Morphology*, July, 1938) state that the form of the vertebral column is definitely related to its function as a supporting rod, a base for attachment of body and limb muscles, and a protection of the spinal cord and nerves. Primitively composed of a series of simple undifferentiated blocks, it progressively becomes complicated through the development of articular processes which give added strength and greater mobility. Simultaneously the centrum and the neutral arch become adapted to withstand tension and compression stresses that vary with the movement possible in different regions of the column. These movements are partially determined by the plane of the zygapophyses and the nature of the intercentral articulation, together with the action of the axial muscles and ligaments. In fishes and primitive tetrapods the axial musculature serves as the chief locomotor organ and consists of a series of myomeres extending with little interruption from the head to the tail. In tetrapods the locomotor function is taken over by the limbs and the axial muscles become progressively differentiated into long flexors and extensors of the column and gradually lose their external segmentation.

Vascular Supply of the Human Kidney.

G. N. RONSTROM (*The Anatomical Record*, June, 1938) gives an account of the vascular supply of the human kidney, based upon dissection and study of corrosion preparations. The author includes a detailed account of the method, which proved most satisfactory in the production of full-bodied, non-shrinking celloidin casts. Corrosion preparations of 54 human kidneys were carefully studied and dissected. In 44 specimens the arteries and pelves were injected. In ten others triple injections were made of the arterial tree, the venous tree and the kidney pelvis. The author's casts reveal the greatest variety in patterns in the branch of the renal artery as it enters the renal sinus. The author confirms the observation made by Braus, that the name "arciform artery", which is in general use, is quite misleading. The veins, however, were found to arch around the pyramids; so that it appeared that the term arciform, which adequately described the veins, had been erroneously carried over to describe arteries. In 64% of this series of corrosion preparations in the human kidney there was no so-called "avascular zone" in the middle third of the kidney. In all the casts the anterior interlobar vessels crossed posteriorly at both poles; this fact ruled out the presence of "avascular zones" there. When the triple-injected casts were studied the "avascular zone" was even less apparent. In these cases, in addition to the interlobar arteries, all the venous arches crossed anteriorly through it.

Congenital Club-Hand.

G. FORBES (*The Anatomical Record*, June, 1938) gives anatomical details of a case of congenital club-hand. The findings are compared with those in previously recorded cases. Ætiological theories are reviewed and the conclusion is drawn that some inherent cell defect in the embryo is the probable cause of this deformity. The suggestion is advanced that muscular abnormality and defect lead to faulty joint development.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on September 29, 1938, at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, DR. B. T. EDYE, the President, in the chair.

Vertigo.

DR. E. P. BLASHKI read a paper entitled: "Vertigo as a Symptom of Aural Disease" (see page 937).

DR. A. S. WALKER read a paper entitled: "Vertigo" (see page 929).

DR. HAROLD RITCHIE said that he had greatly enjoyed both papers. The subject was of interest to every physician. A large number of patients with vertigo were seen. The speakers had in an interesting way illustrated the very different angles of approach to the subject of the aurist and the physician. Dr. Ritchie considered that paroxysmal vertigo was almost always aural in origin. He emphasized the point that there was sometimes very little organic change to be detected in the ear, yet the clinical picture was unmistakable. Dr. Ritchie said that it was paradoxical that the drugs that were most useful in preventing attacks of vertigo often caused them. The barbiturates often caused vertigo, yet if he had to choose one drug for the treatment of vertigo it would be "Luminal". The attacks could be so severe and could appear so frequently that the patient's life was made almost unbearable. Such cases were not numerous; but Dr. Ritchie had seen two patients whose power to earn their livelihood had been quite lost. They would be benefited by section of the eighth cranial nerve. With regard to the extraaural causes of vertigo, Dr. Ritchie said that there was a large number of cases of mild vertigo which could be attributed only to several minor causes all interacting with one another. If the practitioner was fortunate enough to discover the main factor or factors, he was lucky. Certain types of anæmia caused mild, recurrent and persistent vertigo, which was readily cured by cure of the anæmia. A great deal had been said about focal sepsis as a cause of vertigo; but that blessed word no longer possessed the charm of "Mesopotamia" to him. Dr. Ritchie thought that focal sepsis had been ridden to death as the cause of diseases for which medical practitioners could find no explanation. It was often the lazy man's line of retreat. In conclusion, Dr. Ritchie once more tendered his thanks to the speakers and expressed the wish that more joint meetings with special sections could be held, to permit discussion on subjects on which their specialties overlapped.

DR. F. A. E. LAWES spoke from the point of view of the general practitioner. He said that he had been very interested in Dr. Walker's remarks about degrees of vertigo. Many patients had giddy turns or felt giddy. They did not suffer attacks of vertigo, but they were very distressed. Examination of the ear often failed to reveal any cause for the disorder. Dr. Lawes pointed out that many of these people suffered from anxiety neuroses. The typical example was the tired housewife, who never had a holiday and had much worry. If such patients were given sedatives and made to rest, their vertigo usually disappeared. The degree of vertigo was difficult to assess. Dr. Lawes had never seen a case in which vertigo was due entirely to hypertension. With regard to sepsis, Dr. Lawes quoted the case of one man who had had attacks of giddiness and who was in no way neurasthenic. Dr. Lawes had treated him for months, with no improvement. After the removal of two septic teeth he had improved and had been better ever since. Dr. Lawes said that he had read an article in a recent issue of *The American Journal of Digestive Diseases and Nutrition* on the subject of water retention. The author mentioned that migraine was sometimes due to water retention, and he advocated a diet rich in protein and low in carbohydrate for those whose water metabolism was abnormal. He did not advocate restriction of water intake.

DR. D. G. CARRUTHERS thanked the speakers for their papers, and said that the subject was not well understood. The otologist was concerned with the type of case in which ear disease was present. He was often called in in consultation, and should be in all cases, to investigate the aural function fully. As Dr. Walker had said, vertigo caused by an abnormality of the central nervous system was not the same as true labyrinthine vertigo. In central nervous lesions there was commonly no disturbance of the auditory function of the labyrinth at all. Dr. Carruthers had had the chance of examining many tumours of the posterior fossa *et cetera*. In no case had there been any appreciable deafness until the terminal stages. In cases in which the site of the trouble was in the eighth nerve, however, such symptoms as tinnitus were present, and there was some interference with hearing function. He had not had the opportunity to examine many patients suffering from true Ménière's syndrome. Dr. Carruthers next referred to the caloric test. He stressed the need for testing both of the patient's ears in both the horizontal and the upright positions, in order to test both vertical and horizontal canals. In a number of cases in which the lesion was in the central nervous system the vertical canals on the affected side gave no response, while the response from the vertical canals of the opposite side also was often reduced. The response produced by stimulation of the horizontal canals appeared to be less likely to be reduced or lost in those cases. When the site of the trouble was in the labyrinth itself, however, the hearing was reduced, especially for high tones, and all the canals were likely to give a reduced or delayed response on the side affected. Dr. Carruthers then referred to the possibility of the presence of an allergic element in some cases. He said that experiments seemed to suggest this possibility. Speaking of sodium and water retention, Dr. Carruthers said that he had had some patients controlled by attention to such measures, but insufficient time had elapsed for him to be sure that they were really cured. In conclusion, Dr. Carruthers asked Dr. Walker whether he had ever tried ergotamine tartrate in any of these cases.

DR. C. G. MCDONALD expressed his appreciation of the papers. He considered that both speakers were very heroic to have undertaken such a task. He congratulated Dr. Blashki on the philosophical manner in which he had dealt with the subject. He had presented it in a broad general way and had not allowed his attention to be riveted on the semicircular canals. Dr. McDonald thought that Dr. Walker had tended to approach the ear, nose and throat surgeon's point of view; certainly he had presented the thesis that severe vertigo always originated in the ear. Dr. McDonald had been interested in the remark of Dr. Lawes about the frequency of occurrence of giddiness. He was sure that it was common in practice to meet with patients who complained of vertigo or dizziness or some such sensation described in various ways, generally of a mild character. He thought that complaints of giddiness, staggering *et cetera* were among the most common complaints of patients met with in practice. In many instances they were the result of anxiety states. When men or women were worried they experienced curious subjective feelings of walking on air, and sometimes they actually staggered. Also vertigo or dizziness was not at all uncommon after undue use of tobacco and frequently ended in vomiting. Dr. McDonald thought that the mechanism in anxiety states or tobacco poisoning was probably through the intermediation of the vascular system. It was not sufficient to say that the symptoms were functional; there must be an explanation. In anxiety states, when giddiness occurred, it appeared to be due to vasomotor interference with the blood supply to some part of the vestibular mechanism. Nicotine was actually a vasoconstrictor. Another large series of patients with giddiness consisted of those who had suffered from head injuries. At the present time it was the fashion to say that people who developed such symptoms after concussion had unresolved contusions or extensive cerebral lesions; but Dr. McDonald did not

believe this. He considered that the symptoms, dizziness and headache, when they persisted long after the occurrence of the injury, were due to anxiety states, since most men who sustained head injuries believed that great damage had been done to the brain, unless their medical advisers informed them to the contrary. Dr. McDonald disagreed with Dr. Lawes when he said that patients with hypertension did not suffer from vertigo. He agreed with Dr. Walker that it was not at all uncommon for hypertensive people to suffer from vertigo or dizziness, usually not severely. He thought that the cause was again vascular. There was some change in the cerebral circulation, whether spasm or spasm accompanied by œdema, which interfered with the blood supply.

Dr. McDonald asked those present to consider whether the symptoms of vertigo, dizziness *et cetera* were due to changes in the ear or in the central connexions. He believed that giddiness could result from stimulation of the vestibular mechanism in any part of its course, but that in the great majority of cases the stimulus was within the brain. A patient who had a cerebellar lesion could have intense vertigo and staggering. People with tumours of the cerebello-pontine angle often had symptoms of vertigo and very pronounced deafness. Dr. McDonald had in his practice become rather tired of referring patients to the ear, nose and throat surgeons, because in the majority of cases they were unable to give any assistance. He did not suggest that all the lesions responsible for profound giddiness were probably not peripheral; but he did not believe that the majority or all of them were peripheral, and he refused to believe that severe vertigo could be due to a plug of wax in the ear.

DR. H. B. HARWOOD referred to patients with giddiness following head injuries. He had seen quite a number, as a rule a long time after the accident, and quite often no abnormality of the labyrinth could be found when tests were made. In some cases, particularly those in which fractures extending into the ear had occurred, some disturbances were found. In about half, however, no abnormality was detected. In a great many cases the symptoms were in no way connected with the ear itself, in spite of the fact that the patients had varying degrees of deafness.

Dr. Blashki, in reply, said that he thought that a great many of these patients were sent by the physician to the rhinologist after subsidence of the labyrinthine disturbance. Stimulation of any end-organ set off the function that that organ was meant to perform. In inquiring about tinnitus, the medical attendant should remember that many of these patients had a preexisting tinnitus. In the bad old days patients with severe vertigo were placed directly into beds in the medical wards, even when they had acute suppurative disease of the labyrinth. Many died of suppurative meningitis. Such things would not happen at the present time; these patients would be admitted to hospital for examination by the otologist and successfully operated upon. Dr. Blashki then referred to the term "labyrinthine compensation". He said that if one labyrinth became destroyed, after a time it would be found that, on examination of the patient by the turning test, an equal response was obtained by turning both to the right and to the left. It was this phenomenon, and not the fact tha the patient returned to stability after a short disturbed period, that was called "labyrinthine compensation". Dr. Blashki went on to say that one of the advantages of vestibular testing was that the results were not in the control of the patient, nor could he evaluate the result. This was useful after an accident, when a patient was pretending to be deaf. If the vestibular tests elicited a normal response, then the patient could not be believed when he said that he was deaf from trauma. Dr. Blashki could not believe that Dr. Ritchie had completely thrown away the idea that focal sepsis had anything to do with vertigo. He thought that focal sepsis, though removal of it had been overdone, was an important factor.

Referring to Dr. Lawes's remarks about anxiety neuroses, Dr. Blashki said that many of these patients had hypertensive disease. Dr. Blashki wondered what could be said about the patient who saw everything go black. This symptom had been overlooked by the various speakers. Dr. Blashki did not agree with Dr. Carruthers that caloric tests made on a patient who was lying down could be interpreted with the same certainty as when the patient was upright. In the latter position the result depended on the laws enunciated earlier in the evening; but when the patient was prone it was impossible to say in what direction syringing would cause the endolymph to move.

Dr. Walker, in reply, agreed with Dr. Ritchie that even in severe aural vertigo, although there might be little change in the ear, the clinical picture was unmistakable. It was this clinical side of the subject that he had tried to emphasize. He appreciated Dr. Lawes's reference to the sufferers from mild attacks of vertigo; the real diagnosis of their illness frequently fell into the common class of the anxiety neuroses. He could not agree that such patients usually had hypertension. In his own experience their blood pressure was more frequently normal, though the vascular instability of the hypertensive subject did make him liable to mild vertiginous attacks. Dr. McDonald's reference to the mild attacks of giddiness associated with head injuries was interesting, especially in their relation to anxiety states. Dr. Walker agreed with him that the actual mechanism of the giddiness was probably vascular, though he had tried to point out that even in true labyrinthine vertigo the mechanism probably involved questions of fluid pressure also. It should be recalled, however, that headache was also common as a sequel of head injury, and it might be that some of the observations made on headache in these cases would also be relevant with regard to vertigo. C. P. Symonds had pointed out that one of the varieties of post-concussion headache was associated with a low pressure of cerebro-spinal fluid. These patients were usually frequenters of out-patient departments, where they were liberally dosed with bromides; whereas they were much better off if encouraged to lead a more active life and if they were given more stimulating treatment. It was probable that a similar outlook on the giddiness following head injuries would benefit the patient. This was not easy to apply, on account of the complication of workmen's compensation. In reply to Dr. Carruthers, Dr. Walker said he had not tried ergotamine tartrate for severe vertigo. He presumed Dr. Carruthers meant its use during an attack, in which it might be worth a trial; it would, however, be difficult to use it then, because patients were so seldom seen at the time. He would not care to recommend it as a prophylactic in cases of migraine, as others had, on account of the potential toxicity of the drug. He agreed with Dr. McDonald that the otologist could not help in many cases in establishing a diagnosis, but thought it was unfair to expect a diagnosis to be made by specialized tests when it was more simply made by ordinary methods. Dr. Walker, in conclusion, thanked those who had contributed to so interesting a discussion. He particularly thanked Dr. Blashki, with whom he had had a number of fruitful discussions, and who in cooperating with him in the subdivision and handling of the subject, had shown an admirable knowledge and balance.

A MEETING of the New South Wales Branch of the British Medical Association was held on July 21, 1938, at the Women's Hospital, Crown Street, Sydney. The meeting took the form of a number of clinical demonstrations by members of the honorary staff.

The Operative Treatment of Accidental Hæmorrhage.

DR. A. J. GIBSON said that accidental hæmorrhage was one of the most serious complications of pregnancy. It was due to the premature separation of the normally situated placenta. The hæmorrhage might be entirely external or entirely internal or concealed, or it might begin as an internal hæmorrhage and later become external. In the concealed variety changes occurred in the uterine wall that played an important part in the consideration of the treatment to be adopted. The uterine muscle, particularly in the region of the placental site, was infiltrated by extravasated blood, which separated and

injured the muscle fibres. Large ecchymoses might be seen on the peritoneal surface; and sometimes the peritoneum might be fissured, the peritoneal cavity might contain free blood, and hæmatomata might be present between the layers of the broad ligament. As a result of these conditions the abdominal muscles were usually in a state of spasm and the patient suffered from severe shock.

Because of the injury to the uterine muscle and because of the distension of the uterus from the blood collected behind the placenta, the uterus was often atonic and unable to contract and retract as well as it should. The absence of the contractility was partly due to the shock. The most serious cases were those in which the power of contractility was so far lost that hæmorrhage was entirely concealed. These were rare, but were associated with a very high mortality rate. Couvelaire, in 1911, had given the name of utero-placental apoplexy to this hæmorrhagic infiltration of the wall of the uterus.

Dr. Gibson went on to say that accidental hæmorrhage was frequently associated with preeclamptic toxæmia or nephritic toxæmia or hypertension, and usually occurred in the last three months of pregnancy. Evans Shute had studied a series of cases of premature interruption of pregnancy, many of which terminated with the typical signs of severe accidental hæmorrhage. He had found that the most frequently encountered and significant sign in these cases was the gradual appearance of a restricted, palm-sized area of true uterine tenderness accompanied by steady sacral backache. Occasionally these features were soon followed by the occurrence of labour pains, violent fœtal movements and uterine hæmorrhage of any grade of severity; or a gradual elevation of blood pressure developed, accompanied by œdema of the extremities, rapid gain in body weight, and even albuminuria, indicating an early toxæmia of pregnancy. The uterine tenderness in severe cases usually spread over the whole uterus or over a large area of it. It might, however, disappear spontaneously, together with all the signs and symptoms mentioned, except the evidences of toxæmia. If the latter once showed themselves, they tended to persist and progress in the usual way. In four instances he was able to demonstrate, in patients subjected to Cæsarean section, that this area of tenderness coincided accurately with the placental site. In the less severe cases he found the administration of wheat-germ oil useful. He gave doses of 30 to 45 cubic centimetres (eight to twelve drachms) of bulk wheat-germ oil in approximately twenty hours. The oil should be kept cold, and should be not more than eight weeks old. With this treatment the uterine tenderness lessened and the backache and uterine cramps subsided. Discontinuance of the oil therapy was often followed by a recurrence of uterine tenderness and bleeding. The best results were obtained in women who showed little or no evidence of an associated toxæmia. If the treatment was begun at the first sign of toxæmia the toxæmic symptoms were kept in check. If the symptoms of toxæmia had persisted for long before the treatment was begun, the toxæmic symptoms did not seem to be appreciably altered; but the placenta adhered sufficiently well to enable induction and labour to proceed safely when gestation was sufficiently advanced. It was believed that in these cases œstrogenic substances were present in excess, and that the vitamin *E* present in wheat-germ oil acted by controlling this. A useful preparation was the concentrated extract of wheat-germ oil put up in capsule form by various firms.

Dr. Gibson further said that in concealed hæmorrhage the patient in the last few weeks of pregnancy was suddenly seized with faintness and severe abdominal pain. Vomiting might or might not occur. Shock was usually very severe and out of all proportion to the amount of blood lost. The face was pale; the pulse weak and rapid. Toxæmic symptoms, such as œdema, albuminuria and raised blood pressure, might be present. The uterus was hard, tense and tender, and of wooden consistence. It was larger than it should be for the period of amenorrhœa. Fœtal heart sounds and movements were usually absent. The fœtus usually died if more than one-third of the placenta had become separated. Recognition of fœtal parts was difficult, owing to spasm of the abdominal walls and the tense condition of the uterus. Labour pains were often absent during the period of shock. Vaginal bleeding in most cases occurred at some time or other; in rare cases, however, it was absent, and the mortality rate in these cases was very high. If shock passed off, labour pains might begin, but the contractions might be weak.

Speaking of diagnosis, Dr. Gibson said that in cases in which there was a history of preceding toxæmia, chronic nephritis or hypertension, the onset of abdominal pain associated with shock, pallor, restlessness and a tense, hard, woody uterus larger than it should be, with or without vaginal bleeding, was almost pathognomonic. If the fœtal head was engaging or had engaged, accidental hæmorrhage was suggested rather than *placenta prævia*. Rupture of the uterus had to be considered.

With regard to treatment, Dr. Gibson said that it should be stressed that all patients with vaginal bleeding, or with symptoms suggesting that a concealed accidental hæmorrhage had occurred, should whenever possible, and as soon as possible, be transferred to hospital without any vaginal examination or any attempt to pack the vagina. A vaginal examination might cause bleeding to begin again, and the bleeding might be profuse. Vaginal packing was so often inadequate and asepsis so imperfect under home conditions that it was a dangerous procedure. When the hæmorrhage was slight and external, and when shock was absent, expectant treatment with sedatives and rest could be employed. If the hæmorrhage was severe and external, and the patient was in labour, treatment by rupture of the membranes, by the application of a firm abdominal binder, and by the administration of "Pitocin", 0·2 cubic centimetre (three minims) every half hour as required, would probably be successful. If the hæmorrhage was severe and external, and if the patient was not in labour, Cæsarean section was indicated. The most serious type was that in which the bleeding was concealed, or in which concealed as well as apparent bleeding occurred, the patient was not in labour and the os was closed. The apparent bleeding might not be excessive, but these patients suffered severely from shock, and the treatment should be directed in the first place towards overcoming the shock. Morphine, 0·016 gramme (one-quarter of a grain), should be given. Hot water bottles should be applied, and glucose and saline solution should be given *per rectum*. Fluids should be administered by the mouth, and preparations should be made for blood transfusion or for the intravenous injection of gum and saline solution. The pulse rate should be taken frequently, the blood pressure noted, and the size of the uterus noted. In favourable conditions, if the patient recovered from the shock, 0·2 cubic centimetre (three minims) of "Pitocin" could be given every half-hour till good contractions began. The fœtus should lie in a longitudinal position before "Pitocin" was given, for if it lay transversely rupture of the uterus might occur. A firm abdominal binder should be applied. If the os dilated, the membranes might be ruptured. In some cases, however, the shock remained profound. The pulse rate rose, the uterine enlargement increased, and if further vaginal bleeding occurred the patient's condition became worse. If the bleeding continued or if uterine contractions did not occur, Cæsarean section, with or without hysterectomy, had to be done.

The majority of cases of accidental hæmorrhage were of moderate severity and responded to treatment of shock, followed by rupture of the membranes, the administration of "Pitocin" *et cetera*. Packing of the vagina should only rarely be carried out, as it was painful, added to the shock, and predisposed to septic infection. When there was no response and when the pulse rate was rising and becoming weaker, and the size of the uterus was increasing, then Cæsarean section should be performed as soon as possible. A blood transfusion should be given and the operation done as soon as the patient's condition permitted. Concealed accidental hæmorrhage might be such a serious condition that drastic measures had to be adopted to save life.

After the abdomen and the uterus had been opened a decision had to be made as to whether a subtotal hysterectomy should be carried out. If the patient's illness had been a very severe one, and if the uterine musculature

had been extensively affected by extravasation of blood, the probability of the muscle's regaining its contractile power was remote; and unless a subtotal hysterectomy was performed the subsequent slight bleeding might prove fatal. Moreover, it did not take very much longer to perform the hysterectomy, and further blood loss was absolutely controlled. A second blood transfusion should be given immediately the operation was complete, if the patient's condition required it. The earlier a Cæsarean section was performed in these cases, the smaller would be the damage to the uterine musculature, and hence the greater the chance that the uterus would regain its contractile power.

Dr. Gibson went on to say that several authorities stated that hysterectomy was rarely necessary. He had himself performed five Cæsarean sections for this complication. In two he had not performed hysterectomy. One of these patients had died, as the bleeding had continued, in spite of the fact that the uterus seemed to contract reasonably well. Her baby had lived. All the other patients had lived. Dr. Gibson thought that in a severe case, if the surgeon had any doubt, it was safer to perform hysterectomy.

In conclusion, Dr. Gibson said that the treatment could be summarized in the following way. All patients with vaginal bleeding in the last few weeks of pregnancy should be admitted to hospital for observation. They should be kept in bed for a week after all bleeding had ceased. If the bleeding had been slight and if there were no signs of toxæmia, the patient might be allowed out of bed. With more severe bleeding, if the patient was in labour the membranes should be ruptured, a firm abdominal binder should be applied, and "Pitocin" should be given. Severely ill patients should have two blood transfusions, one before operation and the second immediately after the operation had been completed. Dr. Gibson believed that this double transfusion had been the means of saving the lives of two of his patients, and that it was a most important part of the treatment. In accidental hæmorrhage vaginal examination should never be carried out at home, as this procedure was always likely to start a fresh hæmorrhage. It might be made if labour pains were present and if it was intended to rupture the membranes. The fewer vaginal examinations, the better. Severely ill patients who did not respond to treatment should be subjected to Cæsarean section, with or without hysterectomy. Packing of the vagina was seldom necessary and might introduce sepsis unless done with the most meticulous care. All patients with toxæmia or hypertension or chronic nephritis should be carefully watched for the first sign of accidental hæmorrhage. This was often a slight abdominal pain, accompanied by localized tenderness over the uterus and steady sacral backache.

(To be continued.)

MEETING OF THE CONTRACT PRACTITIONERS' GROUP OF THE VICTORIAN BRANCH.

THE first meeting of the Contract Practitioners' Group of the Victorian Branch of the British Medical Association was held at the Medical Society Hall, East Melbourne, on November 10, 1938. It was attended by representative general practitioners from both town and country. This group has been formed for the purpose of discussing and considering any aspect of contract practice. The important question of the moment, which has caused the formation of the group, is national health insurance.

Constitution.

The first business of the meeting was the adoption of the constitution, the salient features of which are as follows:

1. *Objects*: (*a*) To discuss and consider any aspects of contract practice and their development and any matters relating thereto. (*b*) To further the interests of contract practitioners.

2. *Membership*: Membership is to be confined to members of the Victorian Branch of the British Medical Association who are engaged in any contract practice recognized by the Association.

3. *Subscription*: The subscription is to be fixed at each annual meeting, and for the ensuing year will be 10s.

Office Bearers.

The following office bearers were elected:

Chairman: Dr. J. Gowland.
Honorary Secretary: Dr. M. O. Kent Hughes.
Honorary Treasurer: Dr. K. Rush.

The following were elected as metropolitan members of the committee: Dr. G. Ashton, Dr. C. Byrne, Dr. R. Shaw, Dr. L. Neal. The following were elected as country members of the committee: Dr. J. Downing, Dr. A. Lincoln, Dr. K. O'Donnell, Dr. D. Carter, Dr. E. Guymer.

Financial Support.

Correspondence from country members unable to attend was read by Dr. M. O. Kent Hughes and Dr. J. H. Dowling. They expressed wishes of success for the new group, and some included contributions to the funds.

National Health Insurance.

It was resolved, on the motion of Dr. C. Byrne, seconded by Dr. M. O. Kent Hughes:

> That this meeting disapproves of the medical provisions of the present *National Health Insurance and Pensions Act*.

Dr. Byrne spoke of the deficiencies of the Act; he outlined conditions of panel practice as experienced in England, the difficulties of attempting to apply the same Act to two totally dissimilar countries, and the reasons why the Act could not be acceptable to the majority of general practitioners in Victoria. Two of these reasons, he stated, were: first, that the basic principles of the Act were unsound; secondly, that the amount of remuneration of the profession was insufficient for good service. He went on to say that in the administration of any national insurance scheme there should be complete separation of the sickness benefit from the medical benefit; this principle was in accord with a finding of the Royal Commission appointed by the Bruce-Page Government. Failure to load the single man with some responsibility for dependants placed a heavy burden on the married man and made any scheme for dependants economically difficult.

Dr. Byrne then pointed out that some of the English regulations were foreign to an Australian's sense of freedom. One of these regulations stipulated that only the insured person's medical adviser could sign his sickness benefit certificate, and that to do so such medical officer must be treating the insured person at the time. This certainly restricted the patient's choice of doctor, made specialist treatment difficult, and rendered more arduous the work of the insurance doctor. Dr. Byrne outlined an alternative scheme.

Dr. M. O. Kent Hughes discussed the reasons why the medical profession should disapprove of the Act.

Dr. D. Roseby, Dr. C. E. Watson, Dr. G. Ashton and Dr. A. Green also spoke.

The meeting agreed to support the institution of a pledge to refuse service under the national health insurance scheme and expressed the opinion that this should be treated as urgent. The meeting resolved to forward a recommendation on these lines to the Council of the Victorian Branch.

Membership.

The committee appeals to all Victorian practitioners who are eligible, to become members of the group by sending their names, addresses and subscriptions to the honorary secretary without delay.

NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Day, Emily Martha Anning, M.B., Ch.M., 1926 (Univ. Sydney), 56, King's Road, Vaucluse.
Jones, Gordon Richard, M.B., B.S., 1937 (Univ. Sydney), South Grafton.

Proceedings of the Royal Commission Appointed to Inquire into Matters Pertaining to National Health Insurance.

Monday, November 21, 1938.

The sittings of the Commission were resumed in Melbourne at 12 noon on Monday, November 21, 1938.

Mr. Dovey: May it please the Commission, since the sittings in Hobart the conference with the friendly societies of New South Wales and Victoria, which I mentioned at the Hobart hearing, has been held, and I am informed by my learned friend Mr. Slater that an agreement has been arrived at between those bodies, subject to ratification by the executive of the Association in New South Wales, which ratification is expected today. An agreement has been arrived at with respect to a scheme, or a scope, of what is regarded as a reasonable average standard as to existing medical contract practices in Australia. I hope that, during the day, Mr. Slater will be able to announce the ratification of that agreement and that we will be able to tender to the Commission the document drawn up at the conference. I have also to intimate that, since the adjournment at Hobart, I have had the opportunity of conferring with the Chairman of the National Health Insurance Commission, Mr. Brigden, and of communicating to him certain matters which have arisen during the discussions which have taken place since he made his original statement in Sydney. I now propose, with the indulgence of the Commission, to tender Mr. Brigden as a witness and ask him to deal with certain of those matters which would appear to have created doubts and difficulties in the minds of some of the medical witnesses, and which have given rise to some difficulties in our discussions. I hope that Mr. Brigden will be able to clear the air in respect of a number of those matters. So far as they relate to the proposed policy of the Insurance Commission, I hope that he will be able to make them more clear. Some of the matters on which he will speak are directly referred to in the terms of reference, and touch on questions affecting the rates of remuneration for medical practitioners.

It was arranged that the further cross-examination of Mr. Brigden by Mr. Weston should be deferred until the next Sydney sittings.

Mr. Brigden stated that he was prepared to continue negotiations with representatives of the British Medical Association, which had been discontinued upon the opening of the Royal Commission.

Mr. Dovey: By negotiations I take it that you mean negotiations in respect of matters with which this Royal Commission is not directly concerned?

A.: Yes.

Q.: Such as, for example, the promulgation of regulations for the control of the medical practitioners, certification and matters of that kind?

A.: Yes. All our medical regulations are in course of detail. We have not yet drafted a single medical benefit regulation. We have been held up with that work, pending the resumption of our negotiations in respect of those details. They are really distinct from the main subjects of the Royal Commission. Some of them, which have come out in evidence, have been relevant, but at any rate there is still a lot of work to be done in the way of preparing our detailed regulations, as well as the conditions of service. Many of those matters, particularly those in relation to medical arrangements, have to be laid down before we can discuss the matter with any individual practitioner. I think that those matters are directly outside the terms of reference of this Royal Commission.

Q.: Quite a number of medical practitioners, in giving evidence, have indicated that they fear that, under National Health Insurance, they will be subjected to supervision and control which does not obtain under the ordinary existing friendly society practice and, that being so, they claim that possibly some additional remuneration should be paid to them to cover such matters of supervision and control?

A.: Yes.

Q.: I understand that you desire to continue your conferences with the British Medical Association?

A.: That is so.

Q.: And that you are ready and willing to do so at any time, if requested or invited by those representatives?

A.: Yes.

Mr. Brigden then stated that he was prepared to adopt as the scope of service under national health insurance the average standard of contract practice that was being formulated by the friendly societies and that he agreed that it was desirable to have the same scope of service for insured persons and for their dependants.

The next matter dealt with was that concerning differential scales of fees to medical practitioners in country centres and in urban areas.

Mr. Dovey: Have you formulated any ideas, whether considered or tentative, not only as to the difference between the city rate and the country rate, but as to the way in which you would determine the line of demarcation between city and country, whom you would call city and whom you would call country?

A.: No. We had not gone into that because the question has not arisen. Since then we have decided that centres of population of 25,000 should be the dividing line, and that doctors resident in such centres where there are 25,000 people, cities in fact, should be paid the metropolitan rate, or at any rate a standard rate based upon urban conditions, and to all of the doctors outside of that area the differential rates. I think that is a simple and practical differentiation which would suit our administration.

And in arriving at that suggested figure of 25,000 I suppose you have considered the different centres of population in the various States throughout the Commonwealth.

Q.: We will have the figures obtained from the Year Book and tendered at some convenient time. It would mean that there would be three cities outside Melbourne in Victoria: Geelong, Ballarat and Bendigo?

A.: Yes.

Q.: And in New South Wales, Newcastle and Broken Hill would be the only two?

A.: Yes.

And in South Australia, outside of Adelaide, there would be none, and in Western Australia there would be Kalgoorlie, perhaps, but the conditions would seem to be somewhat different in Kalgoorlie.

The Chairman: The broad general notion which you have outlined, Mr. Dovey, may require close examination by the British Medical Association and its representatives; but it is very desirable that you should suggest the broad general outline at the present moment. No definite opinion may be expressed upon it until the British Medical Association has had time to consider it.

Mr. Dovey: That is what I had in mind in getting Mr. Brigden here today, to give Mr. Weston an opportunity of considering what was said and then either make some counter proposal or deal with the proposal.

The Chairman: Yes; or he may have some other suggestion to make as to the way in which this differentiation in the scale of fees could be carried into effect. There are always difficulties in cases of demarcations of this kind.

Mr. Dovey: I mentioned Kalgoorlie in Western Australia; I suppose your Commission, Mr. Brigden, has not yet given consideration to the special character of Kalgoorlie?

A.: No. We recognize that Kalgoorlie and Broken Hill may require some special arrangements; but I am speaking at large just now.

Q.: You had in mind, I take it, the large provincial cities in Queensland, Ipswich, Toowoomba, Rockhampton and Townsville?

A.: Yes.

Q.: That is just your suggestion on broad lines?

A.: Yes.

Q.: I suppose, in respect of that, just as in respect of other matters, you are prepared to listen to suggestions from representatives of the British Medical Association?

A.: Yes.

Dr. Mulvey: By representatives I presume you mean representatives of the practitioners?

A.: Such representatives as may be appointed. To elaborate that further point. Under the Act we have to administer there is provision for an insurance medical practitioners' committee. There cannot be such a committee until there are insurance practitioners; but in the meantime we hope to anticipate the operation of that part of the Act and to establish a body of practitioners who will represent the insurance practitioners who come into the scheme later on. I take it it would be a matter for the profession generally to supply that body to confer with the Commission. That is what I hope will come about in the near future.

Dr. Mulvey: Might I suggest that it would be highly desirable to have the general practitioners themselves represented on that committee?

A.: We are looking to the British Medical Association to help us to get that committee established.

The Chairman: That is when the Act is in operation; what we have to do at the present moment is to devise some provisional, some interim representative body who can speak with authority on behalf of the general practitioners, who will be the men who will give the service under the Act?

A.: Yes.

The Chairman: But how that interim representative body is to be constituted is a matter probably that the British Medical Association can most effectively devise. I do not see that any outside authority can do it for them. . . .

Mr. Dovey: No, Your Honour. It is a curious thing, but my friends who appear for the Federal Council of the British Medical Association, and our friend Mr. Weston, whose appearance on behalf of the British Medical Association in Australia has been announced, have not made any concrete proposals, although this Commission has been sitting for quite a long time now and repeated requests have been made for assistance from anybody who is able to give such assistance. It is a curious thing that no one single medical practitioner, whether a general practitioner or any other kind, has come along with any constructive or other suggestions, so it is difficult to see with whom the Insurance Commission can treat if it is not with some body nominated by the British Medical Association in the State. I confess that I would be very glad to have the assistance of anybody who could speak with some authority or whose opinion would be respected. I do not know whether Dr. Mulvey mentioned the representatives of the general practitioners whom he had in mind?

Dr. Mulvey: I think it is a general principle in British practice that these bodies, during any discussions of the conditions of service or regulations which are being imposed by an outside body, do not become self-governing. And I think it is very desirable that that principle should apply here, and in order to bring such a scheme into operation it would be necessary to come to an agreement with the general practitioners after the findings of the Royal Commission are made known. In other words, that the conditions of service and the medical benefit regulations should be drawn up with insurance practitioners who contract to do the service.

Mr. Dovey: Might I ask you, is it is suggested from a medical point of view that any body can be set up whose agreement would be honoured by the medical profession as a whole, having in mind the fact that the agreement which was entered into on behalf of the medical profession in Australia was repudiated?

Mr. Weston: I think that remark is objectionable.

The Chairman: We will discard "repudiation" and simply say that a proposed agreement was not accepted by the practitioners whom it concerned, and let it go at that.

Mr. Dovey: Yes, Your Honour.

The Chairman: But the present difficulty is this, that there is no body at the present moment representing the general practitioners as such; that is to say, the men who in future would probably be the insurance practitioners. There is no body representing them at the present moment, and as far as I can see there is no feasible means of constituting such a body until the Act is in actual operation and the practitioners ascertain who are going to give service under the Act. So at present all we can do is, in some rough and ready way, get men together who are acknowledged by the general practitioners to speak on their behalf. Who can set that machinery in motion? Who can get the views of the presumptive general practitioners who will be the insurance practitioners of the future? The Government cannot do it. This Commission certainly cannot do it. The Insurance Commission cannot do it; and the only body that has a chance of doing it is the British Medical Association. Are they going to do it? Unless they do it then there will be no interim body constituted at all with whom discussions of the kind which you refer to can take place. We will have to grope along in the way we have been doing without unassisted intelligence to make suggestions which may be workable or which may not be workable; make suggestions, for instance, as to the differentiation between country and urban practitioners in their capitation fees, and also as to the method in which the very great difficulty of the relations which should exist between practitioners and remote patients, patients for whom great distances have to be travelled for country service. It is very desirable that we should have some body representing the men who would be doing the work in future to make suggestions as to what they think is a practicable way of meeting the suggestion.

Dr. Mulvey: May I suggest that the British Medical Association be approached in that regard on the lines suggested by His Honour, that they appoint a representative body of the probable insurance practitioners to confer with the Insurance Commission to determine matters under dispute.

Mr. Dovey: . . . I pass now to a matter which has given rise to a great deal of evidence and in respect of which I may say it would appear, as counsel assisting the Commission, that the doctors have a genuine claim in respect of the original suggestion made by you in regard to travelling allowances. I want you to assume, Mr. Brigden, for the moment that your scheme of taking the number of patients on a doctor's list and ascertaining the distance from his surgery, and assuming there will be one visit per year, and make it a lump sum, apart from whether he visits the patient or not. We want you to assume that, whether it is impracticable or not, and I want you to assume there is a very real fear on the part of the medical practitioners that they may be called out to attend patients unnecessarily, unless there is some deterrent. I want to ask you in the first place, is your Commission, as a matter of policy, prepared to consider a different scheme? I will deal with the scheme in a moment?

A.: Certainly, if you put in what, in our view, was a sensible suggestion to the Commission. At that time we did not have a great deal of opportunity to consider it in detail. We submitted a scheme for the consideration of the doctors.

Q.: That was based on the English system?

A.: It was partly based on the English practice, but it was an attempt to provide something suitable for Australia and we have endeavoured to do our best in submitting evidence to this Commission. We have not a regulation framed and we must have one, but we feel bound to put up suggestions, and if our suggestion in regard to travelling expenses for country doctors is not acceptable to the profession I am perfectly happy to consider some

alternative. We could not get a finally cut-and-dried scheme on the travelling allowance question.

Q.: Of course, you have the English practice to guide you; you also have the existing contract practice in Australia?

A.: Yes.

Q.: I do not know whether you appreciated at the time you made your proposals that, under existing contract practice in Australia, in almost every contract, and in every State, there is provision for the collection of mileage fees by the doctor if he thinks fit, under varying conditions. If it be the opinion of this Royal Commission that some deterrent should be proposed in connexion with mileage, I take it that your Commission will be prepared to favourably consider such a recommendation?

A.: Most decidedly.

Q.: Even though it be not strictly within the terms of reference?

A.: We look for guidance from the Royal Commission on the evidence it has accumulated, on this matter particularly.

Q.: Your Commission, however, is anxious that no insured person should be deprived of medical service merely by reason of the fact that he is living at such a distance from the doctor as makes it impossible for him to pay the mileage?

A.: That is so. We take the view that the men are insured for medical benefit wherever they may live and that it is the duty of my Commission to endeavour to supply such service. If an insured person has no alternative but to send for a doctor—if his case is such that he needs the services of a doctor and has no alternative but to send for him—we wish to avoid imposing any charge upon that person. We want to find a way of overcoming the problem, recognizing that the doctor has difficulties, but recognizing also that the insured patient has his difficulties.

Q.: Would you be prepared to say, as a matter of policy, that ordinarily the doctor should be entitled to require the patient to contribute towards his cost of transport, beyond a certain radius, at so much per mile, if called out, with provision also in the contract with the doctor that the Commission would, in such cases, pay to the doctor a like amount per mile for actual mileage covered?

A.: My Commission would accept a recommendation to that effect as being the judgement of a body that had heard all the evidence and had come to that conclusion as being the best thing in the circumstances. We would certainly accept that recommendation as being necessary in the circumstances in Australia. I do not feel justified in suggesting it myself.

Q.: I gather from what you have said, though, that in the case of a man who really required the services of a doctor and who, in fact, was not able to pay, your Commission would expect the insurance practitioner to attend such a patient?

A.: Yes.

Q.: Might I ask you, in such a case, would your Commission be prepared to pay to the doctor not only your ordinary share of the cost of transport, but the share which otherwise the patient would be expected to pay?

A.: Yes, we would be prepared to do that. We would look for the cooperation of the profession, through the machinery we propose to set up, to see that that kind of thing was not abused; but we are perfectly prepared to accept the principle that we should bear the whole cost of the travelling expenses of the doctor to the insured person, if we are satisfied that the service is necessary.

The Chairman: And the only opinion which is of any value as to whether or not that service is really necessary is the doctor's own opinion?

A.: That is so.

Q.: So that, practically, the position would be this. The doctor would be summoned—I use that term—by a patient a considerable distance away. The doctor, in the ordinary course, would have to attend the patient, because he would not be able to get sufficient information to enable him to decide, "I shall not go, because there is no necessity". In most cases he would have to go and then make up his mind as to whether the call was a reasonable one or not. Supposing, when he arrives at the patient thirty miles away from his surgery, he finds that there was no reasonable necessity for the call. He, the doctor, has done nothing to prevent him from making a charge for the trip. He has acted reasonably, and he would make a claim against your department, but he would say at the same time, "This call was unnecessary; I should not have been called. In my opinion, this patient should be in some way penalized for making an unnecessary and unreasonable call". That is all he could do?

A.: Yes.

Q.: He would make his claim against you for his travelling allowance, whatever it might be, and leave you to deal with the patient who had made an unnecessary call. Well, as I gather, one of the evils which the medical men foresee is that they will have these calls made upon them. They do not wish to waste their time in making the journey, and they do not wish to make a charge against the department; they simply want to avoid being called upon these fools' errands, and, in some way or other, some machinery has to be devised whereby people will be deterred?

A.: If I may say a little further on that point, my Commission is prepared to follow the principles of friendly society practice in Australia, as far as it can do so in conforming with the spirit of this Act. Now it is the practice, I understand, for friendly society patients to pay the doctor mileage in the country centres.

Mr. Dovey: It is the practice for them to have it provided in the contract, and apparently it is the practice for the doctor to get it sometimes, but very often he does not get it. But he has the right to ask for it.

Dr. Mulvey: He exercises humane consideration.

Mr. Dovey: Exactly. If I may say so with respect, the body of medical evidence throughout Australia shows that the doctor never fails to go where it is necessary that he should go, and he never seeks to force payment, as far as the evidence goes, from people who cannot afford to pay.

Dr. Mulvey: That is so.

Mr. Dovey: But so long as there is the deterrent, he is not called out unnecessarily, we have been told.

Dr. Mulvey: And in further regard to that matter, I think that any medical practitioner would consider seriously before reporting a patient to the authorities, as, by doing so, he would estrange that patient and all his relatives—and in most country districts there are a lot of relatives.

The Chairman: That means that the value of the deterrent diminishes to vanishing point. Unless the medical man who has been victimized by an unreasonable call takes steps to put the deterrent into effect, it is going to be of no avail.

Mr. Brigden: We may be victimized too if we are going to pay actual travelling, and if the Commission were to pay for the travelling incurred, we should assume the normal situation to be that the patient paid a proportion of the fees; but only in quite extraordinary circumstances would it be a fair thing for the doctor to claim on the Commission for what the patient should normally pay. In those circumstances I suggest that the regional medical officer should always be called in—our man—to certify a further payment from the Commission's funds.

Dr. Mulvey: That is where the regional medical officer's surveillance will safeguard your interests?

A.: Yes.

Mr. Dovey: And the doctor's interests.

Dr. Mulvey: Yes.

Mr. Dovey (to witness): I suppose we may fairly assume that the doctors are going to be the same in the future as they have been in the past, and that the men and women of Australia will be the same in the future as they have been in the past; that is to say, there will be imposition on the doctors in a few cases, but, in the vast majority of cases, the patient will play fair?

A.: I hope so, but I can foresee difficulties where there is a possibility of the Commission paying instead of the patient. If a patient sends for a doctor and it is a doubtful case as to whether he is urgently in need of the doctor's services or not, and there is a matter of £5 travelling expenses to pay, and the doctor, not wanting to offend the patient or his relatives, is inclined to say, "This is a thing the Commission ought to pay", we do not want to be placed in such a position when there is not any real deterrent at all.

The Chairman: Obviously there must be some real deterrent devised in some way, if possible?

A.: Well, those are the principles we wish to follow, if that is agreeable to the Royal Commission.

Q.: I am inclined to think that those are matters upon which some valuable assistance might be gained from the advice of men who are going to do the work?

A.: Certainly.

Q.: If we can get a representative committee from those men, without waiting until the Act is in actual operation, they might be able at the present moment to make suggestions which will be of great assistance.

Dr. Mulvey: The position which has been stressed by most witnesses is that the patient should be called upon to pay at least something more than a taxi fare to come in and see the doctor.

Mr. Dovey: Someone did suggest a taxi fare, but we were told that at present most of the people get a lift from someone, more or less getting a free ride in, or else, as in some cases, get on a bus.

Dr. Mulvey: That is not my point. It is that if the patient has the alternative of sending for the doctor or going to him, and if he can get the doctor to come out to him at a cost less than a taxi fare, he will exercise the right of calling the doctor out.

Mr. Dovey: Yes, that may well be. (To witness): There is one matter which is to some extent linked up with this question of mileage; that is, a certification. At this stage I confine myself to a certification by insurance practitioners. In your Commission's original proposals it was provided, as I remember, that a certificate should not be given except on an occasion when the doctor had seen the patient. I put to you the case of a man outside the area, with pneumonia or some illness which would incapacitate him for a number of weeks, when it would be well known to his medical officer that he would be incapacitated, but it would be undesirable, to say the least of it, and unfair, to ask that the man should pay the cost of transport of the doctor for the purpose of certification from time to time, and that the doctor should have to spend his time doing it. That seems to be a very real difficulty?

A.: The method of certification which we described earlier was the standard simple method for ordinary practice. My Commission is not so ignorant of the conditions in the country as to suppose or even suggest that it should pay the expenses of the doctor to go out just for the formal purpose of seeing a patient and certifying him. We do not want anything of that kind. We would expect the doctor, however, to act on good evidence. I mean, it may be the evidence of a local person of responsibility who advised the doctor, possibly over the telephone, of the condition of the patient.

Q.: Or it may be that the doctor's ordinary medical training would teach him. I can give you an instance, which may be apt. A man who had been laid up in bed for two or three weeks with bad pneumonia would not be able to do any manual work for, perhaps, six weeks, and the doctor would know that without seeing him. What about that case?

A.: I would like to discuss that kind of thing with the committee that I have in view. It is one of those details of regulations to which we have yet to come.

Q.: May I take it that the attitude of your Commission is that your rules would not be inflexible in respect of certification?

A.: That is so.

Q.: That you would be prepared to relax them to meet circumstances as they arose?

A.: I hope to apply a lot of common sense to these things when we get to them.

The Commission adjourned from 1 p.m. to 2.30 p.m. On its resumption Mr. Dovey said: Before the evidence is resumed I am anxious to remove a misapprehension which apparently existed in the mind of my learned friend Mr. Weston, which I trust is not shared by those others who heard my remarks in respect of something I said this morning. My learned friend has told me he was under the impression that I was indicating that we assisting the Commission had not received the proper, or indeed any, assistance from the representatives of the British Medical Association. I had no thought of saying any such thing, and I take the opportunity of saying here and now, publicly, that anything we have asked of the representatives of the British Medical Association appearing before this Commission, or those associated with them, has been made available to us at the very earliest opportunity.

Mr. Weston stated that it was proposed to submit Mr. Brigden's suggestion concerning the formation of a committee of medical practitioners to the Committee of the British Medical Association, which was to meet on the following Friday.

Mr. Slater tendered a document defining the average scope of existing contract service throughout Australia. This was as follows:

> The following is submitted as a reasonable average standard of existing medical contract practice in Australia, namely:
>
> A general medical practitioner service but excluding:
>
> (1) Any illness of injury occasioned by misconduct, drunkenness, immorality or a disease contracted before the dependant's acceptance upon the list of the medical officer, information of which had been withheld from the medical officer at the time of examination.
>
> (2) Confinements or miscarriages, including attendances upon the mother of the child during thirty days following the confinement or miscarriage for any illness arising from the confinement or miscarriage.
>
> (3) Anæsthetics, other than local anæsthetics, for minor operations.
>
> (4) Surgical operations, excepting minor operations not requiring an anæsthetic, as defined in paragraph (3) hereof.
>
> (5) Fractures.
>
> (6) Dislocations, excepting dislocations of the joints of the fingers, thumbs or toes.
>
> (7) Treatment usually requiring the attention of a specialist.

Mr. Dovey: As my friend Mr. Slater has said, that exhibit indicates a scope of service approximate to that which obtains at present in friendly society contract practices in New South Wales, Queensland, Western Australia, Tasmania and Victoria. In Victoria the fractures and dislocations constituted an included service previously. In this average standard it will be noticed in Item 5 that fractures is excluded, but in Item 6, dislocations, except dislocations of the joints of the fingers, thumbs or toes, is the present item. Mr. Slater will deal with this more fully when he presents his case. What was had in mind in that case was that dependants, who are mostly children, might dislocate some small joint of the finger or toe and it would require a simple and quick manipulation by a medical practitioner only, and it was felt by the friendly societies that ought to come within the included scope of service. It is not such a surgical procedure as would require any long process of treatment, but a very simple sort of thing, probably much more simple than many of the other matters which come within the general practitioner's service. In regard to Item 7, the language which is used in Exhibit *A* is the amended scope of medical service originally proposed by the Insurance Commission, but amended after consultation with the British Medical Association and Dr. Mulvey.

Mr. Dovey: Mr. Brigden, I think you have had an opportunity of seeing this document this morning?

A.: I did.

Q.: Assuming for the time being that this may be regarded as the average standard of existing medical contract practice in Australia (excluding South Australia), what is the attitude of your Commission to such a standard?

A.: We are prepared to accept this standard with the exception of (1); that we could not accept in the words originally proposed.

Q.: Supposing it simply said, instead of all those words that are there, "(1) Excluding alcoholism or venereal disease"?

A.: That would be acceptable to us.

Q.: I suggest that in practice that would probably be two matters which could be covered by (1), though of course one can visualize another case . . .

The Chairman: The other portions of paragraph (1) are quite inapplicable and inappropriate for an insurance service.

Mr. Dovey: Yes. It is suggested that the Commission for the national health insurance scheme would substitute for (1) simply "alcoholism and venereal disease".

Dr. Mulvey: That is excluding those two, other than advice as to the necessity of treatment, I suppose. That is what was asked for by the Commissioner?

A.: We are not insistent upon that. We do not think it is worth a great deal and we would like to exclude absolutely alcoholism and venereal disease.

The Chairman: Yes. After all, the sort of advice that the insurance practitioner would give to a man asking for advice on those matters would not be of any great importance. He would simply say, "Go to one of the men dealing with this".

Dr. Mulvey: He might give him further advice as to the infectivity of the disease and tell him to go elsewhere.

Mr. Dovey: Do you think it is necessary, Dr. Mulvey?

Dr. Mulvey: No. I think any medical practitioner would do it.

Mr. Weston: Will this be subject to the same undertaking as a prior one? Do you recollect another application the substance of which was that there would be no departure in the regulations excepting in trivial matters without consultation with the profession? Does this carry a similar undertaking?

A.: Yes. I would like to say something in regard to No. 7.

Mr. Dovey: Paragraph 7 is drafted along the lines of paragraph 12, and the scope of service that was tendered in evidence by you in Exhibit *A*, with the exception that in your scheme you gave some examples of the treatment which usually required the attention of a specialist. You desire to say something about Exhibit *C-D*?

A.: Yes. My Commission would accept paragraph 7 as it stands on the understanding that the interpretation would be on matters of fact, that is to say, treatment usually required, the treatment of a specialist, as in fact practised under the friendly societies' branches in New South Wales, if that could be accepted.

Discussion ensued concerning the meaning of paragraph (7), and the Chairman pointed out the desirability of further definition in this respect.

The Chairman: The more exhaustive the classification of exclusions the clearer is the position. What we desire here is a code which everyone will understand when he reads it, and a code which is applicable to the specialist and to the non-specialist. The mere fact that a man practising as a general practitioner happens to have a specialist's skill should not put him in a disability as compared with the man who has not got that specialist skill.

Mr. Dovey: No. I respectfully agree with what Your Honour puts. It does seem to me that, in this document as framed, the only thing possibly requiring explanation is (7). If (7) were exemplified with some degree of particularity, it might make the position clearer to the medical practitioner and to the patient.

Mr. Slater: If the Commission pleases, I think that this matter might be cleared a great deal in the evidence which I propose leading. That is the evidence of prominent officials of the friendly societies who have had a great deal of experience. I think we can indicate clearly what is in our minds when the evidence is given.

Dr. Mulvey: I think that, in actual practice, very little difficulty has arisen in the interpretation.

Mr. Slater: Yes. The witness, particularly Mr. Parker, will indicate what has been the experience, and I think that might clear a lot of the ground.

Mr. Dovey (to witness): That scope of service is a slight modification of the scope of service which was proposed by you in your evidence, Exhibit *A*, and also of the scope of service which formed the basis of the negotiations between the official representatives and the representatives of the British Medical Association in April and May of this year. The representatives of the Government, I think, then took a certain view as to the value of those services which were added to what might be called the existing scope; they took the view that you were being over generous in agreeing to the full amount; in other words, that you regarded the extra 2s. which was added on to the sum of 9s. taken as the base for the purpose of your discussion as being over generous, having regard to the nature of the extended service?

A.: We thought that 9s. was more than the equivalent.

Q.: At any rate, rightly or wrongly, you took the view that, whatever the base you started with, 2s. was too much to add for the extended service?

A.: Yes.

Q.: I understand that the Commission has some idea with respect to medical service, if this one is adopted?

A.: For instance, instead of paying 1s. for fractures and dislocations, we should spend the money much more in the interests of the health of our insured people by some other special service. I wish to discuss with the profession the possibility of establishing diagnostic aids, pathological clinics and the like, through existing institutions, for assisting the diagnosis of complaints for medical treatment. That is one of the possibilities we have in mind, if we can spare the money out of our fund for the purpose.

Dr. Mulvey: That is not only sparing the money, but it will effect a great economy in your work. For instance, if you have a pathologist who can determine the blood sugar of a patient, he will determine whether he needs insulin, for instance, and also somebody to examine the blood to determine whether the patient needs liver extract for pernicious anæmia; it will be an economy as well as a help to the general practitioner.

The Chairman: The relevance of what has just been said about this one shilling is this: in the negotiations—which were abortive—the amount of 1s. for fractures and dislocations was mentioned or taken into account?

A.: Yes.

Q.: If fractures and dislocations are excluded from the insurance practice—and apparently they may be, or will be—then I understand your suggestion is not that the 1s. which was originally allocated to them should be disregarded altogether, but should still be taken into account for use in the way that you suggest, aids to diagnostics and that kind of thing?

A.: Yes.

The machinery necessary to provide for such additional services was then discussed, and it appeared that Mr. Brigden's idea was that this surplus money would be put into a separate fund distinct from the medical services fund, which would be established by means of the capitation rate, and that the separate fund should be used, first, to establish practitioners in country areas where they were not now available, and secondly, to establish the diagnostic aids that he had mentioned, as far as the resources of the Commission permitted.

Mr. Dovey: I will pass from that now and ask you to deal with a matter which, like mileage, has given rise to a good deal of discussion since this Commission has sat, that is the matter of night fees. You have read the evidence on these matters. Has the Commission formulated any scheme, or has it any ideas in respect to night fees or services at night?

A.: In my original evidence I suggested that a service outside the agreed hours would be outside the terms of service altogether. We do not wish to prescribe the amount of any fee that should be charged for a service outside our own service, and if there is a night call which is outside the hours of ordinary service, that is not our concern.

Q.: You are prepared to fall in with the suggestion that service at night should be an excluded service, and the fee for such service should be a matter of arrangement between the practitioner and the patient—the fee for the transport, at any rate?

A.: Yes.

Q.: What did you have in mind?

A.: If a doctor is called up at his consulting room after his ordinary hours on some urgent matter, we do not think he should make a charge then, but it would be only within the scope which he considers an urgent call.

Q.: In other words, you think that he should have the right to charge if he is called up?

A.: Yes.

The Chairman: He is made the judge in that case as to whether the call was a justifiable one at night?

A.: Yes.

Q.: If he decides that it is not, then is he to have the right to charge? But if he decides it is a justifiable charge then he has no right to charge because it is covered by this?

A.: Yes.

Q.: So that he is the judge in his own cause. It is a very delicate position for a doctor to be put in.

Mr. Dovey: In this case, as in the other case, it is very difficult to find a formula, and that is a matter which might be dealt with by that body which you suggested this morning. I know the Insurance Commission has been considering the matter.

Dr. Mulvey: It is a matter which affects the medical practitioner very much, because he feels he will not have any leisure unless there is some sound deterrent, and his recreation will be seriously interfered with.

Further discussion took place on this question concerning difficulties that might arise in practice.

Mr. Dovey: While we are on the question of services away from the surgery I want to remind you of the evidence that has been given by the doctors, particularly in New South Wales and in Western Australia, who have a central residence and a surgery and whose practice it is to visit outlying centres on one or more days a week or something of that sort. Can you tell the Commission what would be your policy in respect of such men?

A.: We would desire to encourage that practice in country doctors in sparsely settled districts, and our policy would depend on the local circumstances. We would make special arrangements with the individual doctors to do that work, that is, to visit this town on one day a week, and pay the doctor for that special work his travelling on that day. We would make some supplementary arrangement; but I am not prepared to say what the standard might be. That is part of the general provision for remote areas.

Dr. Mulvey: You would depend on the recommendation of the regional doctor?

A.: Yes.

Mr. Dovey: We had evidence from a doctor who had a surgery at *A*, and whose custom it was to go to *B*, twenty miles away, once a week, and there stay two or three hours. We were told that the practice on that occasion was to charge the ordinary consultation fee without mileage, but if he were called to those outlying centres on occasions other than their regular visits, the practice was to charge mileage. Would your Commission be prepared to allow them to adopt a similar course?

A.: Certainly, we would agree to that.

Q.: A number of witnesses from "one-man towns" have expressed the fear that if they accepted a position under national health insurance they would be obliged to remain at their post from one year's end to another without any relief, or that if they did go off for a few days for a spell they would be obliged to put in a *locum tenens*, otherwise they would have committed some breach of contract and be subject to the pains and penalties therefor. What do you say as to that?

A.: I think that is a case for the use of common sense. We do not want to disbar anybody from January 1 to December 31 in any one place, but we have not thought out a provision for the circumstance. We would not insist on a practitioner not having a week-end or a holiday off, or some other longer period away from his practice and putting a locum in for that time.

The Chairman: I take it you are not going to adhere to one common form of agreement with everyone?

A.: No.

Q.: You will have one form which will have general application but subject to modification in particular circumstances, and I should take it that when you are dealing with a small town which has only room for one medical practitioner your contract would be moulded to meet the circumstances of that particular case?

A.: Yes, Your Honour.

Q.: And the ordinary practitioner himself, being, I presume, a man of some business intelligence, would not enter into an agreement which tied him down rigidly?

A.: No.

Mr. Dovey: Let us get away now from these "one-man towns" and deal with another matter that was mentioned. In South Australia it was suggested by some friendly society witnesses that there was a very good way of preventing unnecessary visits to the doctor and consequently unnecessary dispensary expenses at the chemist's.

Mr. Dovey (continuing): You remember that evidence?

A.: Yes, I do.

Q.: And, furthermore, you may remember that some doctors have spoken of the fact that the lodge patient very frequently comes to the doctor for a bottle of medicine. At page 897 of the notes an officer of the friendly societies of South Australia spoke of the practice which had been instituted there of making a charge to the patient by the chemist of 3d. per script on presentation over the counter. What is the view of the Insurance Commission on that matter? You have not proposed any such scheme at all?

A.: No.

Q.: May I put it in this way to you: Supposing that this Royal Commission, in its deliberations, came to the conclusion that it would be an effective deterrent on unnecessary visits to the doctor and the chemist, and that it was a desirable deterrent; can you indicate what would be the policy of your Commission in those circumstances?

A.: We would pay great attention to the opinion of the Royal Commission on that matter.

Q.: It is not within the terms of reference, Your Honour; that is why I have asked the question.

Mr. Brigden: In view of evidence which has been given, I hope that some reference may be made to the matter. We are very much concerned with that tendency apparently to indulge in unnecessary drugs and medicines, not only because of our drug bill, but because of the health of the people. We have learnt from your own evidence, and from other information we receive, that, in the interests of health, it is desirable to put some curtailment on the taking of drugs, just for the sake of taking drugs. If, in the opinion of the Royal Commission, we should do something on the lines suggested, we would very much welcome the authority of the Royal Commission.

Mr. Dovey: Doctors have spoken about the difficulties and the extra work they might have in prescribing under national health insurance, compared with work which is necessary in prescribing under friendly society contract practice. I want to ask you, is it the intention of your Commission to produce and publish a formulary?

A.: It is.

Q.: Will the insurance practitioner be entitled to prescribe any of the drugs or mixtures of drugs which are set out in the formulary?

A.: Certainly.

Q.: And the Commission will bear the cost of such drugs?

A.: Yes.

Q.: You know the little book which has been used in England?

A.: Yes, I know that.

Q.: It is issued to medical practitioners, and I think that it is compiled by the Insurance Acts Committee of the British Medical Association?

A.: Yes.

Q.: In it certain numbers and names are given to the different mixtures, medicaments and the like. Is it your intention to prepare something on those lines?

A.: Certainly, and we want the doctors to use the shorthand which is customary in the profession in prescribing.

Q.: So that you do not expect them to write out the full chemical contents of the mixtures?

A.: Certainly not.

Q.: But simply to indicate to the chemist the mixture by reference to the formulary?

A.: Three people can understand it—the doctor, the chemist, and my organization which prices the prescriptions.

Q.: I want to take an instance which was given in evidence by one of the medical men who had had English panel experience. He said that he wanted to prescribe some opiate for his patient: There was something in the book, but he wanted to prescribe "Nepenthe", and he got into hot water with the regional officer over it, "Nepenthe" being a proprietary line more expensive than the similar drug, which gives the same sort of results, I suppose, set out in the Pharmacopœia. What will be the attitude of your Commission on that matter?

A.: The Act provides for a medical benefit council to decide these matters. You will see it in the medical benefit section of the Act, in Section 32. It will be one of the functions of this medical benefit council to make recommendations concerning drugs. For instance, "The Commission may, after consultation with the medical benefit council, decide whether or not any substance or preparation is, for the purposes of this Act, a proper or sufficient drug or medicine". "The medical council is to consist of medical practitioners, pharmaceutical chemists and other persons." Those are Sections 57 and 58.

Q.: I want you to assume that you have that council and you have your drugs all prescribed. If a patient wants something outside the formulary, what is the position?

A.: I say that he should pay for it.

Q.: And if a doctor suggests to a patient that he should have something outside the formulary, is it your idea that the doctor should inform the patient that if he takes it it will be something for which he will be obliged to pay?

A.: That is so.

Dr. Mulvey: That is what is done in lodge practice at the present time.

After some further discussion upon this point, Mr. Dovey stated that he understood that the Commission did not intend to allot persons to insurance practitioners' lists, except such persons as desired to be on a list and were unable to find a medical officer willing to have them. Mr. Brigden assented to this statement. Mr. Brigden also stated that it was proposed to provide that sons and daughters employed by the father or mother should not be insurable persons.

Certain matters that had been raised by medical witnesses were then put to Mr. Brigden by Mr. Dovey.

Mr. Dovey: Bearing in mind your contract with the doctors, what would be the Commission's attitude to an insurance practitioner who was consulted by an insured person who did not make the fact known to the doctor and paid the doctor a fee; would it have any objection to that?

A.: No, we would have no objection to his paying the doctor a fee.

Q.: Supposing Mr. *A*, an insured person, goes to Doctor *X*, an insurance practitioner, and he does not disclose the fact that he is an insured person. He consults the doctor in the ordinary way and he is asked for and pays the usual consultation fee. Supposing Mr. *A* comes along at a later stage and says, "Look here, Doctor *X*, I was an insured person, you have no right to charge me". What would be the attitude of your Commission?

A.: We would not take any part.

Q.: In other words, the onus is on the insured person to disclose the fact to the doctor?

A.: Yes.

The Chairman: Such a case as that could not arise where a man was already on the doctor's list, but you are talking about a man who is on a doctor's list but who is outside the district of that doctor?

Mr. Dovey: Yes. There is another case that Mr. Abrahams mentioned: two or three doctors in a country town where patient *A* has been on Doctor *X*'s list for some time, but upon developing some trouble he is advised by his friend that he will be dealt with much more effectively by Doctor *Y* in the town. He goes along to Doctor *Y*, who knows quite well he is Doctor *X*'s patient, and patient *A* says, "I want you to treat me". In those circumstances I am suggesting for Mr. Brigden's consideration that Doctor *Y* should be able to take a fee from him, so long as both parties know where they stand?

A.: We do not propose to make any regulation on the matter at all, but if in the course of time it turns out that what we are warned about at present takes place, that is doctors farming out their patients to one another, we might take some action. We are starting on this work in the belief that the medical practitioners will do their job in good faith and will not play these tricks—if I may put it bluntly.

The Chairman: That is not a trick. Patient *A* is on Doctor *X*'s list, but patient *A* takes it into his head that Doctor *Y* treats him much better and Doctor *Y* is in the next street. He goes to Doctor *Y*, but he is not on Doctor *Y*'s list, and Doctor *Y* is under no obligation to treat him. It seems to me in such a case as that that Doctor *Y* should be left quite at liberty to treat him as a patient in an ordinary way. That is the type of case we heard about in Hobart. Some people fell in love with a particular doctor?

A.: I am sorry if I used offensive language, but we have been warned against the possibilities of three or four practitioners in a town developing the pleasant little habit of sending patients to one another for the purpose of collecting fees. I do not think there is much in that, but if it did develop we should have to act.

Dr. Mulvey: Your regional medical officer would look after that?

A.: Yes.

The question of the minimum period for which the Royal Commission's recommendations should apply was then raised. Mr. Weston suggested three years. The Chairman stated that he would require fairly strong evidence to satisfy him that less than five years was an adequate period.

Mr. Dovey: It has been mentioned, either in evidence or at the Bar table, Mr. Brigden, that under national health insurance no certificate would be accepted by the Commission or by the approved societies except such certificates were given by a registered insurance practitioner. Would it be the policy of your Commission to make such a rule inflexible?

A.: No. A general standard rule must be that certificates should be from the man's own insurance doctor; but we have not yet come to the question of drawing it up in the form of a regulation, and I do not think we should want to insist upon that procedure in all cases, where there are circumstances from which it is perfectly clear that it would be a mere formality to get an insurance doctor to give a certificate. In fact, we would rather approach it from the other way and say that we would allow any medical practitioner's certificate to operate provided we are satisfied of the circumstances under which it is given.

Q.: You are not going to say you will take anybody's certificates?

A.: No. In effect these are cheque books in the hands of doctors, and we cannot allow anybody to sign them.

Q.: In other words, you will deal with the matter in a reasonable way so as not to penalize the assured person, and so as not to penalize the medical practitioner, whether he be an insurance practitioner or not?

A.: Certainly not.

Mr. Brigden was then shortly cross-examined by Mr. Slater; Mr. Weston reserved his cross-examination until later.

The Commission, at 4.15 p.m., adjourned until the following day, Tuesday, November 22, 1938, at 10.30 a.m.

Tuesday, November 22, 1938.

The whole of Tuesday was taken up with the evidence of witnesses called by Mr. Slater on behalf of the friendly societies of Victoria.

Mr. John Saunders Parker, the General Secretary of the Victorian Branch of the Australian Natives Association, gave an account of the nature and the working of his

organization. He also detailed the attitude of his organization to certain difficulties in relation to mileage, minor surgical operations and fees for excluded services, that had arisen in the past. Mr. Parker suggested that it would be desirable to fix the fees for operations, but the Chairman pointed out that the Commonwealth legislature had no power to fix prices for medical services generally. He stated that it was assumed that the legislature had a right to make legislation as to national insurance in respect of medical services, but that outside of insurance it had no more right to legislate to fix prices for medical services than to fix the price of bacon. On the same point Dr. Mulvey stated: From the medical practitioner's point of view it is more desirable to have an arrangement between the practitioner and the patient. It has worked very well in New South Wales; we have got no schedule list, but at the same time there is a recognized scale of charges in every medical district for operations that come outside the scope of the agreement for ordinary practitioner's service.

Further problems as to the operation in practice of the friendly societies' scope of service were discussed by Mr. Parker, who then went on to describe the hospital benefit fund, contributions to which were compulsory in his society. On payment of 2s. 6d. a year, a member became entitled to a hospital benefit of one guinea per week for thirteen weeks in any one year in any private, intermediate or public hospital.

Mr. Parker, on being cross-examined by Mr. Weston, stated that it had been found impossible to give the Commission any assistance upon the question of the ascertainment of the number of dependants of a friendly society member.

Mr. Parker was then cross-examined by Mr. Dovey. Upon the question of mileage, Mr. Dovey asked: I want to deal with mileage from another point of view. In your experience, would you say that there has ever been any difficulty on the part of the lodge patient in securing the attendance of the doctor in urgent or necessary cases, even though he may not be in a position to pay the mileage which the doctor could charge?

A.: There would be a few, but they would be very few indeed. Generally there is a bond of understanding in matters of this kind, which has enabled the whole thing to work fairly smoothly. The main difficulty has been in regard to cost, and not in regard to actual service.

Q.: In other words, the doctor who has the right to charge does not in fact charge when his charge would create hardship?

A.: If he knew that there would be no possibility of the individual paying, or that he was in impoverished circumstances, he might make a nominal charge just to establish his right, but there would be very little difficulty in that respect.

Mr. Walter Harry Best, Grand Secretary of the Manchester Unity Independent Order of Oddfellows, was examined by Mr. Slater. Mr. Best described the working of his organization and gave certain statistical information in respect of it. After cross-examination by Mr. Weston and Mr. Bowie Wilson the witness withdrew.

Mr. Arthur Gerald Byrne was examined by Mr. Slater. Mr. Byrne is an official of the Australian Natives Association and is at present president of the Friendly Societies' Association of Victoria. He produced membership tables and other statistical information relating to friendly societies in Victoria. He was then examined as to the relations of the British Medical Association and the friendly societies in Victoria, both before and after the Wasley award in 1918.

Mr. Slater: You know of the circumstances that led up to the making of the Wasley award?

A.: Yes. I was very greatly interested in that all the time. A period of economic prosperity existed at that particular time and wages became higher all round. The basic wage increased and the medical officers, certainly as I think was their right, showed in evidence that they were not getting sufficient for their services and they did make representations.

Q.: You know that under the terms of the Wasley award the medical officers got practically all that they sought?

A.: All they asked for.

Q.: Can you tell us what the rates were prior to the making of the ward?

A.: They varied considerably; they ran from 11s. to about 13s. a year for the metropolitan area.

Mr. Dovey: Was that the female rate?

A.: Yes.

Mr. Slater: And for the country?

A.: They varied then. There was no fixed rate; but they did go as high as £1 and in some cases more where the doctor provided medicines as well as gave medical attention.

Q.: You know that what they sought from the arbitrator was £1 for the metropolitan rate and 26s. for the country rate?

A.: Yes.

Q.: Can you tell us what the judge awarded them?

A.: One pound was given for the metropolitan rate and 25s. was given for the country rate.

Q.: Evidence was called on both sides at that inquiry, was it not?

A.: Yes.

The Chairman: I have not read through this report yet, but I am very interested to know that the profession at that time asked for 20s. and 26s. respectively. I had a hazy idea that His Honour Judge Wasley did not give anything like what they asked, but apparently he did.

Mr. Slater: After hearing the dispute Judge Wasley gave the British Medical Association what they asked for so far as the metropolitan area was concerned, and 1s. short for their country claim?

A.: Yes.

The Chairman: At that time what were the rates prevailing for similar work in the other States?

Mr. Dovey: New South Wales was much the same as it is today.

Mr. Weston: I am instructed that in 1921 the New South Wales metropolitan rate was 21s. It was then raised in that year to 26s. and the New South Wales country rate was 32s.

Mr. Slater: The agreement prescribed the scope of service as well as the remuneration?

A.: Yes; the model agreement was drawn out then.

Q.: And that model agreement varied some of the terms of the then preexisting agreement?

A.: Yes, it varied slightly some of them.

Q.: Another matter which was won for the doctors, if I may use that term, for the first time was the income limit?

A.: Yes, that was fixed.

Mr. Byrne then gave evidence concerning the abortive move made by the Victorian Branch of the British Medical Association early in 1938 to secure an increase in the capitation rate.

After short cross-examination by Mr. Weston and Mr. Dovey the witness withdrew.

The Commission adjourned at 3.50 p.m. until Wednesday, November 23, 1938, at 10.30 a.m.

Wednesday, November 23, 1938.

When proceedings opened, Mr. Slater informed the Commission that he had received word that the New South Wales Friendly Societies' Association had agreed that the scope of service submitted to the Commission upon the preceding day represented an average of the scope of service in contract practice in Australia.

Mr. E. H. Ward, Financial Secretary of the Victorian Branch of the British Medical Association, who had given evidence at earlier sittings in Melbourne, was further examined by Mr. Weston in relation to the investigations made and statistics obtained as to the number of dependants of the average friendly society member in Victoria. Mr. Ward stated that the statistics produced related to over 11,000 lodge members and that in practically every case he was able to produce to the Commission a form

filled in by the member or under the member's supervision, giving details as to his family and dependants. Evidence was given explaining the forms used and the procedure adopted and the manner in which the results were tabulated. Certain modifications in the tabulations that had been tendered at the first sittings at Melbourne were explained.

Mr. Ward was cross-examined by Mr. Dovey concerning the work that he had done and the precise methods adopted both in selecting the medical practitioners whose lodge members were the subject of these investigations and the manner in which the investigations and tabulations had been carried out. Mr. Dovey suggested that the results should have been weighted to be actuarially accurate.

The Chairman: I understand the suggestion is that they should be weighted according to the proportion of the general population and not the proportion of lodge members in particular parts of the country, and according to the actual general population in the cities. Whether it was worth while doing it or not is another matter?

A.: We were not taking this out in relation to the general population, but this was solely in connexion with the lodge membership.

Q.: I suppose the argument is this: if you do not weight them according to the population, or if you are unable to weight them according to the numbers of lodge members in the different parts of the country, you should have weighted them according to population.

Mr. Dovey: Yes, and it could be said further if they were weighted according to population they would be weighted approximately in accordance with the lodge membership. (To witness): You do not claim to be a statistician, do you, Mr. Ward?

A.: No.

The Chairman: What difference would it make? The difference of a small decimal fraction is not of much importance for our purposes. The importance of the family unit in lodge members for our purpose is that we have first of all to find out what is the average contract payment or we have to posit the general lodge payment and set against that lodge payment the number of persons in respect of whom that payment was made. If we take a lodge payment for 30s. and set against that a lodge family unit of 2·5 on one contention, and on the other contention a family unit of 2·6, it will make very little difference.

Mr. Dovey: I agree with that. I do not propose to pursue this at any length with Mr. Ward, because he has frankly admitted he is not a statistician. I propose to deal with it from the point of view of the statistician with Mr. Gawler. I do not propose to ask Mr. Ward to explain why he has taken these figures out in this particular way because I thought it better to have that from the expert—without disparaging Mr. Ward's efforts, which have been very great in this regard—and discuss what the true family unit is or what it should be, with a person accustomed to dealing with such matters.

The Chairman: As far as the family unit has to be considered by us, I am hoping to find some authoritative evidence, sufficiently extensive for us to rely upon, so that we can discard all the amateur statistics. Amateur statistics are frail things. Perhaps Mr. Gawler may be able to assist us sufficiently for our purposes.

After some further cross-examination upon cognate matters Mr. Ward retired.

Dr. M. O. Kent Hughes, of Moonee Ponds, who had also given evidence at the first Melbourne sittings, was further cross-examined by Mr. Dovey. Dr. Kent Hughes is one of the medical officers whose lodge patients had been investigated by Mr. Ward and who had made calculations and returns as to the number of services rendered to lodge members and their dependants. Mr. Dovey's cross-examination was directed to testing the accuracy of these calculations and returns. Mr. Dovey desired to cross-examine the witness concerning his attitude to national health insurance. In this regard the Chairman stated: I must say, Mr. Dovey, that supposing you do question the witness as to his attitude concerning that matter, it is not going to affect my mind very much as to the value of his evidence in respect of the relevant matters. As to his keenness to assist the Commission, well, I do not care whether he is keen or not, so long as the facts to which he deposes are acceptable.

Sir George Allard: I agree entirely with His Honour. I do not think that any attitude the witness is taking with regard to practice under national insurance affects his presentation of the facts in this matter. It may be a lawyer's view that it is the correct way of testing whether his evidence is correct or not, but I do not think it applies in this instance.

The Chairman: I think it is desirable for me, as Chairman, to make my view clear as to this aspect. I do not think it is any function of this Royal Commission to come to any conclusion or to form any opinion as to the desirability of any national insurance act—neither this nor any other insurance act. It has nothing whatever to do with us, and I do not think it is desirable that we should indicate any opinion as to the propriety, the desirability or the expediency of a general agitation by the medical profession in respect of any insurance act. We may have our own strong private opinions that such agitations are desirable or undesirable, but it has nothing to do with us, and, therefore, we express no opinion.

Mr. Dovey: My duty is done so long as I have an intimation from this Commission that it will not affect the mind of the Commission if a witness who has given evidence before it says, for example, "I will not have anything to do with the medical side of national health insurance, even though I am a medical practitioner". Assuming that that would not affect the mind of the Commission, I am not concerned with finding out for my own benefit what a witness's views are, and I assume from that that if it were assumed that every witness—because there cannot be any question of degree—who has been called in the witness box and has given evidence about this, that and the other—dependants and the possible effect on his practice—had, to the knowledge of the Commission, pledged himself to have nothing whatever to do with national insurance, nevertheless, it would not affect the mind of the Commission.

The Chairman: It would not affect my mind—not that by itself.

Mr. Oswald Gawler, Government Statist for Victoria, was examined by Mr. Dovey concerning the summary of results obtained from the inquiry conducted by the British Medical Association as to the number of dependants of the average lodge member in Victoria. Mr. Gawler gave the figures compiled in 1930 from contributors to the State Superannuation Fund employed in the railways department.

Mr. Dovey: Summarizing those results from the Victorian railway employees for the moment, I think that this result is arrived at per thousand males: married men, 733; wives, 733; children, 1,205; unmarried men, 267; making a total of 2,938 per thousand males?

A.: Yes.

Q.: In other words, a family unit of 2·938?

A.: Yes. I regard that as the most satisfactory evidence I have seen on this subject.

Q.: Before proceeding to a criticism of these samples, it might be convenient at this stage to make a summary per thousand males of the Victorian Branch of the British Medical Association sample as originally presented by Mr. Ward; is that convenient?

A.: Yes, except that I had to make certain assumptions. I did not then have the figures with respect to men only.

Q.: I think that the Victorian Branch of the British Medical Association sample may be summarised as follows, per thousand males: married men, 713; wives, 713; children, 897; unmarried men, 287; other dependants, 33; total, 2,643; in other words, a family unit of 2·643; is that so?

A.: Yes.

Mr. Gawler then proceeded to give a criticism on statistical grounds of the British Medical Association's figures,

with special reference to the necessity for weighting in view of the fact that the distribution of the friendly society members who supplied the data did not correspond with the population distribution in Victoria in the districts described as inner industrial, outer industrial, metropolitan residential, provincial cities and country towns. Mr. Gawler stated that his statistical examination of the figures forced him to say that they were unsatisfactory, that as a statistician he could not accept them, and that the resultant unit was too small. Mr. Gawler gave detailed reasons for his conclusions and was later asked by Mr. Dovey: You have made a calculation which summarizes the position as you see it in Victoria, of the family unit?

A.: Yes, this is a reasonable approach to a difficult problem, or as reasonable as one can approach something which must be surrounded by a great deal of doubt, and something which is not static but changing from time to time. Next year it will be something different; last year it was something higher.

Q.: Your calculation per 1,000 males is as follows:

Married men	733
Wives	733
Children	1,003
Single men	267
Other dependants (say)	33
Loading, 50% extra sickness among wives	367
	3,136

This is an estimate for Victoria. If a similar estimate were made for the whole of Australia, it would be larger in respect of both wives and children?

A.: Yes.

Q.: That is that the family unit in a friendly society may be assumed fairly to be 3·136?

A.: The basis of this is probably that railway experience, the children being reduced by 16·81. That figure of 33 is assumption, and the only information I have is from the British Medical Association sample, which may or may not be correct, but it is not very important. The 367 represents a 50% loading for wives.

Mr. Gawler was then cross-examined by Mr. Weston upon statistical matters.

The Chairman: One of the British Medical Association figures was 2·643. That, I take it, was for the country, if I remember rightly?

A.: No. That was for groups 1, 2 and 3.

Q.: Does that correspond broadly speaking, with the railway groups?

A.: I should say so.

Q.: So that one may take it that one is comparing substantially like with like; that is to say, your figure of 3·136, which appears here, is applicable, broadly speaking, to the same group as the British Medical Association figure of 2·643?

A.: Yes.

Q.: In your figure of 3·136 there is included the loading of 367, the 50% extra sickness amongst wives?

A.: Yes.

Q.: Eliminating that from your figure, you get a remainder of 2·769. Is it correct or not correct to say that that figure of 2·769 corresponds in its application to the British Medical Association figure of 2·643?

A.: Yes.

Q.: So that the only difference between those two figures is the difference between those two numbers; that is to say, a difference of ·120 or thereabouts?

A.: Yes.

Q.: Whether it is proper to take into consideration this loading for the extra sickness of women or not is another matter, but as to the remaining figure, your result seems to be substantially the same as the British Medical Association result?

A.: Apart from the difference as regards children, they confirm each other.

Q.: And for working purposes, one would say that if you took the mean between the two of them, you would be near enough?

A.: If one could accept the lower figure. But every difference of ·1, of course, does make quite a substantial difference.

Q.: But we will never, no matter how long we are here, get at absolute precision in arriving at this family unit. It is bound to be to some extent an estimate, and what I was wondering was whether it would not be reasonable to take the mean between your figure and the British Medical Association figure as the figure to be applied so far as Victoria is concerned?

A.: I could not accept that myself.

Q.: What is wrong with it?

A.: My criticism of their own figures.

Q.: What you would suggest, I suppose, would be that we should accept and act upon your figure of 2·769, leaving out that 50% loading?

A.: I put that before you for what it is worth.

Q.: That is, so far as Victoria is concerned, in preference to the British Medical Association figure of 2·643?

A.: As a unit of numbers in the family only. I do not suggest that it should be applied for the purposes for which that figure of 3·2 was used.

Q.: We have to apply it in some such way as that. That is our job, apparently?

A.: And that is also subject to the date as at which this figure is taken.

Q.: There again we have already said that we are dealing with a changing or fluctuating state of things?

A.: That was why I gave you the 1930 figure and then proceeded to adjust it to 1938.

The Commission adjourned at 4.37 p.m. until Thursday, November 24, 1938, at 10.30 a.m.

Thursday, November 24, 1938.

Mr. Gawler was further examined by Mr. Dovey concerning certain minor modifications to his figures that had been made in consequence of the new figures as to dependants given by Mr. Ward. Mr. Gawler's cross-examination by Mr. Weston was then continued.

Mr. Weston: In applying your experience and skill to the Victorian Branch of the British Medical Association sample, supplemented by the considerations you have mentioned this morning, you found no serious discrepancy? Is that broadly correct?

A.: That is so, assuming these data are correct, and subject to my criticism of it.

Q.: The next part of your criticism is directed to that assumption, the correctness of the data?

A.: Yes.

Q.: And that is the other major matter you dealt with in your evidence?

A.: Yes.

Further cross-examination was directed to the theoretical accuracy of the criticisms that Mr. Gawler had made.

Mr. Bowie Wilson then produced and explained to the Commission a summary that he had prepared of the evidence given by medical practitioners during the course of the inquiry in the various States in respect of the total of lodge members and dependants and the capitation fees received in respect thereof.

Mr. H. C. Green, member of the National Insurance Commission, was further examined by Mr. Dovey. Mr. Green explained the tabulated results, which were tendered, of the *questionnaire* that had been sent to some 108,000 members of friendly societies in New South Wales, Victoria, Queensland, South Australia and Western Australia. The percentage of replies received was stated to be 49·9. Mr. Green explained in detail the large number of tables that had been prepared from the replies received. The average unit for male members under the age of sixty-five years and their dependants was stated to be 2·72, and the average unit for married male members

3·20.[1] Mr. Green's estimation of the weighted average of medical fees paid to practitioners in respect of male members under the age of sixty-five years was as shown in the following table:[1]

Weighted Average Amount Paid in Medical Fees per Lodge Member (in Shillings).

	Metropolitan.	Other.	Total.
Including South Australia	24·1	28·7	26·6
Excluding South Australia	23·4	28·0	25·4

The figures were given as including and excluding South Australian figures, owing to the different capitation rates prevailing in that State.

Mr. Green's estimation of the weighted average of medical fees payable to doctors in respect of male members under the age of sixty-five years and their dependants is shown in the following table. The figures represent the amount payable under present conditions per person, compared with the payment per member, which was shown in the earlier table.

Weighted Average Paid in Medical Fees per Person Entitled to Medical Attention under Lodge Agreements (in Shillings).

	Metropolitan.	Other.	Total.
Including South Australia	9·1	10·8	9·8
Excluding South Australia	8·1	9·8	9·1

Mr. Green was shortly cross-examined upon his evidence, and his general cross-examination was postponed until the sittings at Sydney.

The Commission adjourned at 4.10 p.m. until Friday, November 25, 1938, at 10.30 a.m.

Friday, November 25, 1938.

Mr. Gawler was recalled and gave further evidence upon the British Medical Association sample. He stated that the revised figures of Mr. Ward made a difference in the result, which now approximated still more closely to the Victorian railways sample. The difference, instead of being 0·0431, was now 0·038 in the size of the unit of a male friendly society member and his dependants.

Mr. J. S. Parker was recalled to give certain figures relating to the Australian Natives Association, particularly with reference to the number of members who failed to keep up their payments, and the reasons for such failure.

Mr. Slater read an extract from an article by the late Dr. Felix Meyer in "The Book of Melbourne, Australia, 1935", published by the British Medical Association upon the occasion of the one hundred and third annual meeting. The passage reads as follows:

> For forty years the lodge doctors in Victoria suffered from competition within the profession, and from pressure upon the friendly societies without, with the result that rates as low as seven shillings and sixpence per family per annum were paid—the ordinary rate being fourteen shillings. The New South Wales Branch of the British Medical Association previously organized itself successfully and won a larger increase in remuneration and better conditions. After some years of organization in Victoria, and some negotiations with the grand lodges, 100% of lodge doctors in the cities, and 98% in the country, resigned their appointments in 1916. After two years of dispute the State Government appointed a Royal Commission under a judge, and the profession won everything it asked for.

[1] These figures should be compared with those upon which the calculations were made in the early discussions, namely, a unit of 3·2 and an average capitation rate of 29s.

Dr. Henry George Judkins, of Box Hill, a residential suburb, about nine miles from Melbourne, was examined by Mr. Dovey. Dr. Judkins gave confidential evidence concerning his lodge and private practices.

Dr. Robert Douglas Aitchison, of Albert Park, Dr. Gidian McCrae Rutherford, of Kensington, and Dr. John Herbert Body, of Elsternwick, also were called by Mr. Dovey and gave evidence of a similar nature.

The Commission adjourned at 12.40 p.m. until Monday, November 28, 1938, at 10.30 a.m.

Correspondence.

THE PRESENT POSITION OF SURGERY OF THE THYREOID.

SIR: I have to thank Mr. Poate for his patience in discussing with me, in your issue of the 19th instant, the technique of thyreoidectomy. It is good for the younger man to be allowed to see into the mind of the master, and one has a full appreciation of the opportunity. One can say also that in his own hands Mr. Poate's handling of the goitre problem is superb to a degree which would make it an impertinence to suggest that he modify his technique in any way.

But he is a teacher and an authority, and his methods will be followed by the rank and file of surgeons. This is why I suggest that wedge resection is more suitable for general adoption and consequently the operation of choice. I will describe it very briefly.

The upper pole is cleared and the superior thyreoid vessels ligated and divided. Then the whole lobe is displaced forward and its lower pole cleared and vessels emerging therefrom ligated and divided. Then two or three sutures are placed in the gland to catch the larger branches of the inferior thyreoid. Then, before proceeding to actual resection, exactly the same procedure is followed on the opposite side. This disposes of the greater part of the blood supply of the gland and makes the remaining stages as clean as the first. Then the resection is done on one side, after which the isthmus is dissected clear and resection on the opposite side carried out in continuity.

So does one hope to dispose of all possible objections to the method. The whole lobe is dislocated forward on each side, enabling the operator to deal with retrolaryngeal or intrathoracic processes (a plague on both!), as he can deal also with the non-evident goitres encountered in the male. And I will say that Dinsmore errs in descriptive accuracy when he says that it is a portion of the posterior border of the lobe which is allowed to remain. If this were so, Mr. Poate's objections would be perfectly valid. Indeed he may have seen the operation done in this manner.

The resection should include the whole upper pole, the whole lower pole, and the posterior border as well; for when the lobe is displaced forward the true posterior border takes up a lateral position, and what appears then as the border is actually gland surface just behind the tracheo-œsophageal angle. And it is only a very small wedge of gland tissue covering this angle for a distance of two centimetres at most which is allowed to remain on each side. Following such an operation secondary operations will be as rare as after resections done by Mr. Poate's method, and no more difficult. I showed one case last year in which a "*plus* forty-five" goitre became an advanced myxœdemic following an operation done in this manner.

Now for the advantages of wedge resection. They number two. It is quicker, as, next to the work at the upper pole, most time is taken in clearing at the tracheo-œsophageal angle; it also precludes possible injury to the recurrent laryngeal nerve. That the latter occurrence was not uncommon after thyreoidectomy in the past will be confirmed by laryngologists.

In conclusion, and with respect, I would submit that Mr. Poate actually does a wedge resection on the left side where the plaguy processes are apt to be met with and after he has removed the right lobe. Also that by wedge resection I refer not to the method as originated some years ago, but to the modification described above, which is now coming to be generally practised.

Yours, etc.,

W. MAXWELL.

141, Macquarie Street,
Sydney,
November 20, 1938.

DIPHTHERIA IMMUNIZATION AS A PARTIAL PREVENTIVE OF POLIOMYELITIS.

SIR: An interesting article by Dr. J. M. Dwyer in your issue of November 26, 1938, ends on page 895 thus: "In towns where a substantial proportion of children were immunized against diphtheria, these children were significantly less likely to contract poliomyelitis than their unimmunized companions of the same age group."

Were this conclusion borne out by the figures quoted it would be of great theoretical importance in the doctrine of specific immunity and of enormous practical importance in the prevention of poliomyelitis. Unfortunately it is not.

Dr. Dwyer tells us that of 19,853 children, 6,742 were immunized against diphtheria and 13,111 were not. Of the 6,742 immunized, 16 acquired poliomyelitis, and of the 13,111 not immunized, 45 did. He then calculates that for the 61 cases in 19,853 children the standard deviation is 7·8. So far so good. But he now proceeds to compare "The difference between the infected series = (45 – 16) = 29" with the standard deviation, and finds it 3·7 times greater and draws the conclusion quoted above. Here he errs: the difference he should have used is the difference between the expected number of cases (on his assumption) among the 6,742, which is about 21, and the observed number, which is 16. This difference, 21 – 16, is 5, and so far from being 3·7 times greater than his standard deviation, is less, and may very well have arisen solely from fluctuations of sampling.

There is, however, another and better method of using his figures, and this is less unfavourable to his conclusion. This method is to assume that the true incidence of poliomyelitis is that in the group of children not immunized against diphtheria, that is, 45 in 13,111, and to inquire if the immunization in the other group of 6,742 affected the incidence. On this assumption we should expect about 23 cases in the 6,742, with a standard deviation of about 4·7 (I spare you the arithmetical calculation); the difference between the expected number and the observed number, 16, is 7, which is about 1·5 times the standard deviation, (1·5) × (4·7) = 7 nearly. But though the difference by this method is greater than the standard deviation, it is so little greater as to be insignificant, for until a deviation exceeds three times the standard deviation we cannot feel any great confidence that it is significant of a new factor.

The only conclusion, therefore, to be drawn from Dr. Dwyer's figures is that children immunized against diphtheria do not become significantly less liable to poliomyelitis.

Yours, etc.,

GUY GRIFFITHS, M.D., F.R.A.C.P.

131, Macquarie Street,
Sydney,
November 27, 1938.

PRIVATE HOSPITAL FEES.

SIR: I wonder how many of our profession, either general practitioner or consultant, have ever interested themselves about the accounts received and paid by their patients from and to private hospitals.

It will be probably said that this is none of our business, as it is a matter which solely concerns the patient and the hospital. My experience of late years, however, an experience gained by having paid hospital expenses myself, by listening to the experience and comments of patients who have been in private hospitals, and finally, and the most important of all, through losing private fees from patients who prefer to go into the intermediate sections of public hospitals, suggests that it is time we interested ourselves in this matter. I have spoken to fellow practitioners about this subject, and without exception their experience has been the same.

In my opinion the complaints of the patients are justified. Having been quoted by their attendant an estimated fee of, say, five guineas a week, they are somewhat disturbed to receive an account far in excess of that estimate, the account being swollen by extras. A friend of mine, whose wife was three weeks in a private hospital, occupying a ten-guinea room, received an account for sixty-three guineas.

The great complaint is that of extras and special nurses. I might add one more, that of a theatre charge. Is not a theatre part of the hospital equipment? As much of the hospital's equipment as instrument equipment is that of a surgeon? Can a private hospital function successfully financially and efficiently without a theatre? I will leave this point to be considered by your readers.

Similar arguments can be brought to bear on the charges made for extras: heating of rooms, douches, enemata, hypodermic injections *et cetera*. Why one shilling for a dose of *oleum ricini*?

Finally, the necessity for special nurses. My opinion is that private hospitals should take the good with the bad. They offer to provide nursing attendance on the sick, and consequently they should not request further assistance if a patient is iller than usual; provided, however, that if a patient requests a special nurse, it is a matter entirely for the patient. I have noticed, however, that a private hospital never reduces the nursing charges when patients provide special nurses.

Let me now be constructive. I feel that private hospitals, if they do not desire to lose their possible clientele to intermediate or private hospitals attached to public hospitals, should charge inclusive fees. These fees should include everything except cost of prescriptions ordered by the medical attendant. It would be a simple matter of accountancy to estimate an extra fee to cover all extras; this fee would simplify quotations to patients by attendants and remove the source of complaints by patients. I am afraid, however, it would remove a considerable source of profit to the hospital.

Yours, etc.,

"COTTON WOOL."

Sydney,
November 21, 1938.

Post-Graduate Work.

NEW SOUTH WALES POST-GRADUATE COMMITTEE IN MEDICINE.

Course in Medicine.

THE course in medicine previously announced by the New South Wales Post-Graduate Committee in Medicine to be held from Monday, January 23, to Friday, March 17, 1939, has been deferred until later in the year, owing to an alteration in the date of examination for membership of the Royal Australasian College of Physicians.

Obituary.

EUSTACE RUSSELL.

WE regret to announce the death of Dr. Eustace Russell, which occurred on November 23, 1938, at Ascot, Queensland.

Corrigendum.

DR. NORMAN LITTLE has pointed out that he is Honorary Assistant Orthopædic Surgeon to the Out-Patients' Department of Lewisham Hospital, and not Honorary Orthopædic Surgeon, as stated at the head of the paper by Dr. Wilfred Vickers and himself, which appeared in the issue of November 26, 1938.

Books Received.

A GALLERY OF GUM TREES, by A. W. D'Ombrain, M.B., Ch.M., D.O.M.S.; 1938. Sydney: Australasian Medical Publishing Company Limited. Crown 4to, pp. 53, with illustrations from original paintings in water-colour by T. Evans. Price: 17s. 6d. net.

GAS AND AIR ANALGESIA, by R. J. Minnitt, M.D.; 1938. London: Baillière, Tindall and Cox. Crown 8vo, pp. 92, with illustrations. Price: 3s. net.

SURGEON EXTRAORDINARY: THE LIFE OF J. B. MURPHY, by L. Davis, M.D., M.S., Ph.D., with a foreword by A. J. Cronin; 1938. London: G. G. Harrap and Company Limited; Australia: Angus and Robertson Limited. Demy 8vo, pp. 287. Price: 8s. 6d. net.

SLEEPING THROUGH SPACE, by A. Cannon, K.C.A., M.D., Ph.D., D.P.M., M.A., Ch.B., F.R.S.A., F.R.G.S., Hon.F.B.P.S.; 1938. Nottingham: The Walcot Publishing Company. Crown 8vo, pp. 131. Price: 5s. net.

ELEMENTARY ANATOMY AND PHYSIOLOGY, by J. Whillis, M.D., M.S., F.R.C.S., with a foreword by T. B. Johnston, M.D., Ch.B.; 1938. London: J. and A. Churchill Limited. Royal 8vo, pp. 352, with illustrations. Price: 12s. 6d. net.

Diary for the Month.

DEC. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
DEC. 6.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
DEC. 7.—Victorian Branch, B.M.A.: Annual Meeting.
DEC. 7.—South Australian Branch, B.M.A.: Council.
DEC. 8.—New South Wales Branch, B.M.A.: Branch.
DEC. 9.—Queensland Branch, B.M.A.: Annual Meeting.
DEC. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
DEC. 14.—Victorian Branch, B.M.A.: Council.
DEC. 16.—Queensland Branch, B.M.A.: Council.
DEC. 20.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xiv to xxvii.

ALFRED HOSPITAL, PRAHRAN, VICTORIA: Medical Officers.
CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.
FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Junior Resident Medical Officer.
LAUNCESTON GENERAL HOSPITAL, LAUNCESTON, TASMANIA: Junior Resident Medical Officers.
MATER MISERICORDIÆ PUBLIC HOSPITALS, BRISBANE, QUEENSLAND: Resident Medical Officers.
NATIONAL HOSPITAL, QUEEN SQUARE, LONDON, ENGLAND: Research Fellowship.
ROCKHAMPTON HOSPITALS BOARD, ROCKHAMPTON, QUEENSLAND: Resident Medical Officer.
ROYAL HOBART HOSPITAL, HOBART, TASMANIA: Resident Medical Officers.
SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.
THE UNIVERSITY OF MELBOURNE, VICTORIA: Staff Vacancies.
THE VICTORIAN EYE AND EAR HOSPITAL, MELBOURNE, VICTORIA: Resident Surgeons.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

Editorial Notices.

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